

## ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, 262, 264, and 268

[FRL-4130-5]

### Hazardous Waste Management System; Identification and Listing of Hazardous Waste

**AGENCY:** Environmental Protection Agency.

**ACTION:** Proposed rule, tentative response to Chemical Manufacturers Association petition, and request for comments.

**SUMMARY:** The Environmental Protection Agency (EPA) today is proposing two approaches for amending its regulations under the Resource Conservation and Recovery Act (RCRA) for hazardous waste identification. Today's proposed rule is called the Hazardous Waste Identification Rule (HWIR). The first approach would establish concentration-based exemption criteria (CBEC) for listed hazardous wastes, wastes mixtures, derivatives, and media (including soils and ground-water) contaminated with certain listed hazardous wastes for exiting RCRA Subtitle C management requirements. The second approach proposed would establish "characteristic" levels for listed hazardous wastes, wastes mixtures, derivatives, and media (including soils and ground-water) contaminated with certain listed hazardous wastes for both entering and exiting RCRA Subtitle C via an expansion of the number of toxic constituents in the Toxicity Characteristics (TC) rule. This approach is referred to as the Expanded Characteristics Option (ECHO).

Under the CBEC approach, listed wastes and contaminated media meeting this CBEC would no longer be subject to some of the hazardous waste management requirements under subtitle C of RCRA. The Agency is proposing that the exemption be self-implementing for both wastes and media. Generators wishing to take advantage of the CBEC exemption must test their wastes, submit a notification and certification to the Agency providing specified information on the waste and, the process from which the waste is generated, and waste management practices. No Agency review of sampling plans or waste analysis data, or prior Agency approval, would be required before wastes or media could be managed as non-hazardous. Generators would be required to re-test their wastes or media

and re-submit notifications and certifications annually for the first two years, and every three years thereafter.

Under the ECHO approach, listed wastes and contaminated media which do not exhibit a characteristic would not be regulated by the hazardous waste management requirements under subtitle C of RCRA. To implement this approach, today's notice proposes to revise the current TC rule to include as many additional appendix viii constituents as possible. For all listed wastes whose constituents are included in the expanded characteristics, the mixture and derived-from rules would not apply. Consistent with the current TC, generators (whose hazard could be evaluated with the expanded TC) could test their wastes or rely on their knowledge of the waste to determine if their waste exhibited a characteristic. Generators would be required to provide the authorized State (or EPA) with a one time notice for wastes exiting the subtitle C requirements.

The Agency has endeavored to develop exemption requirements which have a practical impact and make the exemptions available to all generators managing listed waste and contaminated media meeting the exemption levels proposed in today's notice. The implementation provisions of today's proposal reflect a balancing of the Agency's informational needs for oversight and enforcement with the practical resource considerations of the generator.

This notice also contains the Agency's tentative response to a petition for rulemaking submitted by the Chemical Manufacturers Association. The Agency requests comment on all aspects of this proposal.

**DATES:** EPA will accept public comments on this proposed rule until July 20, 1992. Comments postmarked after this date may not be considered. Any person may request a public hearing on this proposal by filing a request with Mr. David Bussard, whose address appears below, by June 4, 1992.

**ADDRESSES:** The public must send an original and two copies of their comments to: EPA RCRA Docket (S-212) (OS-305), 401 M Street, SW., Washington, DC 20460. Place "Docket number F-92-HWEP-FFFFF" on your comments. The Office of Solid Waste (OSW) docket is located in room 2427 at the above address, and is open from 9 a.m. to 4 p.m., Monday through Friday, excluding Federal holidays. The public must make an appointment to review docket materials by calling (202) 260-9327. The public may copy material from any regulatory docket at a cost of \$0.15

per page. Copies of the background documents, Integrated Risk Information System (IRIS) chemical files, and other references (which are not readily available) are available for viewing and copying only in the OSW docket.

Requests for a public hearing should be addressed to Mr. David Bussard, Director, Characterization and Assessment Division, Office of Solid Waste (OS-330), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

**FOR FURTHER INFORMATION CONTACT:** The RCRA/Superfund Hotline at (800) 424-9346 or at (202) 260-3000. For technical information contact Mr. William A. Collins, Jr., Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (202) 260-4791.

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## I. Authority

These regulations are proposed under the authority of sections 1006, 2002(a), 3001, 3002, 3004 and 3006 of the Solid Waste Disposal Act of 1970, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 84 (HSWA), 42 U.S.C. 6905, 6912(a), 6921, 6922, 6924 and 6926.

## II. Background

### A. Overview—A National Waste Management System

The Resource Conservation and Recovery Act (RCRA), directs the Environmental Protection Agency (EPA) to develop a national program governing waste management that both promotes the protection of human health and the environment and conserves valuable material and energy resources. This national waste management program involves all levels of government—federal, state and local—all of whom have major roles in the achievement of these national goals. The program potentially encompasses a huge and diverse universe of wastes currently an estimated 13 billion tons per year—including hazardous and nonhazardous industrial wastes, special wastes (e.g., from mining, oil and gas production) and municipal solid waste. These wastes present varying degrees of risk if mismanaged, thereby creating the need for a waste management program able to deal effectively with a variable universe of was, risks, and waste management practices.

For the last decade, however, the federal government has focused the bulk of its efforts on defining and implementing the hazardous waste program under subtitle C of RCRA. These efforts, along with increased liability for cleanup costs under CERCLA and comparable State statutes, have resulted in dramatic changes in how U.S. industries manage hazardous waste. EPA's early regulatory decisions in defining hazardous waste reached broadly to ensure that wastes presenting hazards were quickly brought into the hazardous waste management system. This was accomplished, in part, through the promulgation of the "mixture" and "derived-from" rules (40 CFR 261.3(a)(2)(iv) and 40 CFR 261.3(c)(2)(i), respectively) which define as hazardous

certain waste mixtures and materials derived from hazardous waste. The Agency promulgated the "mixture" and "derived-from" rules to close what it believed were potentially major loopholes in the subtitle C management system (see 45 FR 33084, 33095). However, as this definition has been implemented many have recognized that it has resulted in the regulation of certain low hazard wastes as hazardous. Many of these problems became of increasing significance with changes in RCRA, its regulations, and industrial practices since 1980.

In 1984 Congress amended RCRA to ban all hazardous waste land disposal unless and until it had been with the best demonstrated available technology (BDAT). As treatment of hazardous waste began, the volume of residuals derived from treatment grew. These residuals often have low concentrations of hazardous constituents. EPA's analysis indicates that millions of tons of mixtures and derived-from residuals that must be managed as hazardous waste because of their history (i.e., what they were mixed with or derived from) may actually pose quite low hazards.

Additionally, as EPA sought to list those hazardous waste streams which could pose a threat to public health over the past twelve years, important differences have emerged between the concentrations of the same hazardous constituents in different waste streams. This is because EPA bases a listing determination on a variety of factors and not just on concentrations of certain hazardous constituents. Some of these factors (e.g., historic mismanagement practices) are not quantifiable. The overall result in the listing program is that there are no eat concentrations above which a waste is hazardous, and below which it is not. Moreover, because listings identify wastes based on its origin or process, two waste streams containing similar hazardous constituents can have different regulatory status (one being regulated while the other is not) if they have a different origin.

Over time, particularly with increased treatment, the disparity between the potential risks a material poses to human health and the environment and the degree of regulatory control over the material has increased. Consistent with its continuum of control approach, EPA believes that low risk waste should not be subject to full subtitle C regulation. It is EPA's view that the subtitle C program is intended to address situations where there may be substantial present or potential to human health or the environment from

mismanagement of waste (see RCRA section 1004(5)(B)).

Accordingly, the purpose of this rulemaking is to take an initial step toward defining wastes which do not merit regulation under subtitle C, and which can and will be safely managed under other regulatory regimes. The first step in what the Agency refers to as the "RCRA Reform Initiative," is proposing modifications to the RCRA regulatory framework which will address over-regulatory situations created by the "mixture" and "derived-from" rules. The Agency intends to promulgate regulatory modifications no later than April 28, 1993 and requests comment on all the options in today's notice. The Agency is not opposed to implementing further regulatory reforms that are both desirable and technically feasible by April 1993. The Agency requests comment from the regulated community, and all other interested parties, on input and information to assist in this effort.

This rule and other ongoing and future EPA actions will help to define a continuum of control for waste management. EPA favors an approach that tailors waste management requirements to the risk posed by waste. The concept of a continuum of control involves two essential elements. First, it involves tailoring waste management requirements to waste risk under a coordinated, efficient management structure. Waste management covers a large variety of wastes posing diverse risks—some which pose no risk, others which pose significant risks and still others that may pose some risk under certain circumstances. Under a continuum of control, high hazard wastes would require a high level of control, and lower hazard wastes would require corresponding lower levels of control. Second, the continuum also involves defining the appropriate roles for various levels of government in regulating these wastes. For example, RCRA creates an assertive Federal role in setting national standards for the subtitle C hazardous waste system. However, RCRA establishes a more limited Federal role for management of solid wastes where risks are lower.

EPA believes it is time to look at developing a viable continuum of control. The RCRA national waste management program is nearly twelve years old and EPA, the States and the regulated community have gained significant experience in managing wastes. EPA and the States have made significant strides in developing a regulatory framework for hazardous and nonhazardous wastes, particularly in

applying treatment technologies and instituting waste reduction practices.

This proposal is one of a number of activities which, as part of the RCRA Reform Initiative the Agency is either considering or has begun, will re-target subtitle C management towards wastes presenting the most significant risks. For example, the Agency is re-addressing the impact of the definition of solid waste on hazardous waste recycling. The goal is to develop a program that encourages recycling while continuing to ensure that such recycling is environmentally sound. Future activities will reduce regulatory barriers to hazardous waste recycling and tailor the requirements to fit the actual risk posed.

In this notice, EPA is proposing to define the conditions under which certain hazardous wastes no longer present a substantial threat to human health and the environment and therefore do not merit regulation under subtitle C of RCRA. EPA is considering several conceptual approaches to address this issue. The first approach is to eventually set consistent concentration-based levels for exiting subtitle C management across all listed waste streams and all hazardous constituents. Under this approach, the current waste identification system of listings, characteristics, and the mixture and derived-from rules would continue to define "entry" to the subtitle C program; this approach would define new "exit" criteria for wastes and media to leave subtitle C control and to be managed under subtitle D of RCRA and State and local waste management requirements. There are several options to determine these concentration-based levels. One option is to set a single exemption multiple above risk-based concentration levels (*i.e.*, the exemption concentration for each hazardous constituent is either equal to or a fixed multiple above a health-based concentration for that constituent). A second option is to vary the multiple for each hazardous constituent to reflect the different chemical properties of the constituent. A third option is to set technology-based concentration levels (*i.e.*, the exemption concentration for each hazardous constituent is based on the Land Disposal Restriction requirements at CFR part 268).

The second approach is to set consistent characteristic levels for both entering and exiting subtitle C management across all waste streams. For example, the hazardous waste toxicity characteristics is the approach EPA uses under RCRA to identify testable parameters, such that any solid waste which has a concentration above

the toxicity characteristics level must be managed under subtitle C until it has a concentration below the toxicity characteristics level—the "entrance" is the same concentration as the "exit." There are several options in today's notice that uses this approach to replace the mixture and derived-from rules. One method is to expand the hazardous constituents regulated under the current characteristics.

In addition to these two structural approaches, the Agency is also considering the use of management standards in conjunction with these alternatives as a way of providing a continuum of management. Under this approach, wastes within certain concentration ranges would be contingently exempt from subtitle C regulation if certain waste management practices are followed. For example, if these wastes are disposed in a lined landfill or in areas of low precipitation, then they could be exempted from subtitle C regulation. Section III discusses in greater detail the way in which management standards could be combined with each of the structural approaches to provide a more effective continuum of management for these wastes. All of these approaches will be discussed in more detail in the section III of this proposal. All are in line with the Agency's continuum of control concept. Each has advantages and disadvantages.

In the near term, the Agency recognizes the necessity of addressing, in a timely manner, comments received on the reinstatement by EPA of the mixture and derived-from rules remanded on procedural grounds in *Shell Oil Company v. U.S. Environmental Protection Agency*, 950 F.2d 751 (D.C. Cir. 1991). EPA seeks comment specifically on how well the exemption approaches presented in today's notice minimizes or eliminates the extent to which the existing mixture and derived-from rules may operate to regulate wastes which do not need to be managed under subtitle C.

The contingent management approach is an approach that, by definition, is tailored to provide different, less stringent exemption criteria for a waste if it is managed in a particular way. Under this approach, the level of control can directly tied to the risk posed by the waste. However, in the past, the Agency has found significant implementation obstacles to contingent management (see 55 FR 11807; March 29, 1990). As a result, the Agency is actively engaged in identifying alternative ways to refine the nation's hazardous waste management

system and seeks comment on all the approaches included in this notice.

It is the Agency's intention to move toward the implementation of a continuum of control. Today's notice represents a step in that direction. EPA requests comment on all aspects of this proposal.

### *B. The Current Hazardous Wastes Identification Program*

#### 1. Characteristics and Listings

Section 1004(5) of RCRA defined "hazardous waste," in part, as a "solid waste" which may "pose a substantial present or potential hazard to human health and the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Pursuant to subtitle C, the Agency was required to develop and promulgate criteria for identifying: characteristics of hazardous waste and to list particular wastes as hazardous.

Currently, the Agency designates wastes as hazardous in one of two ways. One way is to identify properties or "characteristics" which, if exhibited by a waste, indicate a potential hazard if the waste is improperly managed. To date, the Agency has identified four types of characteristics: ignitability, corrosivity, reactivity, and toxicity (see 55 FR 11798, March 29, 1990, for the expanded toxicity characteristics). Each person generating a solid waste is responsible for determining whether such solid waste exhibits any of these characteristics. Any solid waste that exhibits any of the characteristics remains hazardous until it no longer exhibits the characteristics.

The other way the Agency designates wastes as hazardous is by "listing." The Agency has studied wastes generated by many industrial activities and has determined that these wastes should be defined as hazardous waste (listed) for various reasons, such as they contain significant levels of toxic and/or carcinogenic constituents, manifest one or more of the hazardous waste characteristics, or have the potential to exert specific detrimental effects on the environment. As discussed in the preambles and in associated dockets accompanying the listings, EPA determined that the listed wastes typically and frequently contain hazardous constituents at levels that "pose a substantial present or potential threat to human health or the environment if the wastes are improperly treated, stored, transported, disposed of, or otherwise managed." The wastes thus meet the definition of "hazardous waste" under section 1004(5) of RCRA. In general, under EPA's

regulations, the Agency has interpreted "posing a substantial threat" to mean that these wastes contain toxic constituents at levels many times greater than acceptable for human exposure and that these toxicants are sufficiently mobile and persistent to reach environmental or human receptors.

On May 19, 1980, as part of the final and interim final regulations implementing section 3001 of RCRA, EPA published two lists of hazardous wastes: One composed of wastes generated from non-specific sources (e.g., spent solvents) and one composed of wastes generated from specific sources (e.g., distillation bottoms from the production of benzyl chloride). The Agency also published two lists of commercial chemical products that are hazardous wastes when discarded, intended for discard, or spilled. These four lists have been amended several times, and are currently published in 40 CFR 261.31, 261.32, 261.33(e) and (f), respectively.

#### 2. Origins of the "Mixture", "Derived-from" and "Contained-In" Rules

On December 18, 1978 (43 FR 53946), EPA published a proposed rule that outlined the Agency's intended approach to regulating hazardous waste management, including a definition of hazardous waste. Under this proposal, a solid waste would have been defined as a hazardous waste if it specified characteristics, or if it was specifically listed by EPA as a hazardous waste. Furthermore, if a particular listed hazardous waste stream did not exhibit any of the characteristics, generators could show it to be nonhazardous and thus exempt from regulation as a hazardous waste. In the proposed rule, the Agency introduced eight possible characteristics of hazardous waste, of which four have been adopted (ignitability, corrosivity, reactivity, and toxicity). The proposed rule also included a proposal to list a number of hazardous waste streams.

On May 19, 1980 (45 FR 33066), the Agency published final rules governing the management of hazardous waste. Under the final rules, the definition of hazardous waste included characteristic hazardous wastes, listed hazardous wastes, and mixtures of solid wastes and one or more listed hazardous wastes. Wastes are characteristically hazardous if they exhibit any of the four characteristics, if they meet certain toxicity criteria or if they contain certain toxic constituents (see 40 CFR 261.10-24).

The provision governing mixtures of solid waste and listed hazardous waste

is known as the "mixture" rule (currently 40 CFR 261.3(a)(2)(iv)). As promulgated in May 1980, it required that a mixture be managed as hazardous unless it has been delisted. "Delisting" is a procedure whereby a person may file a petition with EPA to remove a specific waste from the hazardous waste listing by demonstrating that the waste in question does not pose a hazard (see 40 CFR 260.22).

In addition, the May 19, 1980, final rules included the "derived-from" rule (currently 40 CFR 261.3 (c)(2)(i) and (d)(2)). It states that any solid waste generated from the treatment, storage, or disposal of a listed hazardous waste, including any sludge, spill residue, ash, emission control dust or leachate, remains a hazardous waste unless or until delisted.

Further, 40 CFR 261.3(c)(2)(i) specifies that any waste (such as rags, clothing, absorbents) that contains a listed waste must be managed as if it were hazardous waste ("contained-in" rule).

The Agency has interpreted the "contained-in rule" to apply to media that are not solid wastes, but contain a listed waste (such as contaminated soil and groundwater).<sup>1</sup> That is, media that are contaminated with hazardous waste must be managed as if they were hazardous wastes until they no longer contain the listed waste, exhibit a characteristic as defined at 40 CFR 261.3(a)(2)(i), or are delisted. The Agency has not issued any specific rules as to when, or at what levels, environmental media contaminated with hazardous wastes are no longer considered to "contain" those hazardous wastes.

The three rules described above ("derived-from", "mixture", and "contained-in") apply regardless of the concentrations and mobilities of hazardous constituents in the "derived from" or "mixture" waste, or in the material or media containing the listed waste.

#### 3. Status of "Mixture" and "Derived-from" Rules

Numerous petitions for judicial review were brought to challenge the May 19, 1980, final rules. One of the challenges alleged that the definition of hazardous waste proposed on December 18, 1978, did not adequately discuss the "mixture" and "derived-from" rules promulgated in the final regulations. The petitioners thus argued that they were

<sup>1</sup> EPA's application of the "contained in rule" to contaminated media was upheld by the D.C. Circuit Court of Appeals in *Chemical Waste Management, Inc. v. U.S. EPA*, 869 F.2d 1526 (D.C. Cir. 1989).



deprived of adequate notice and opportunity to comment as required by the Administrative Procedures Act (APA, 5 U.S.C. 553(b)). Most other issues raised by the petitioners were resolved by settlement, by subsequent statutory or regulatory revisions, or by the failure of petitioners to pursue them. However, the question of whether the Agency gave adequate notice of the "mixture" and "derived-from" rules was not resolved.

On December 6, 1991, the court agreed with the petitioners that the 1978 proposal did not adequately provide notice of either rule and that the petitioners thus did not have sufficient opportunity to comment (*Shell Oil Co. v. EPA*, 950 F.2d 751 (D.C. Cir. 1991)). The court vacated the rules and remanded them to the Agency because of procedural defects but did not reach any of the substantive issues raised by the petitioners. However, the court also recognized the problems with vacating long-standing rules that are essential to the hazardous waste management program, and suggested that the Agency could reinstate the rules "in whole or in part" on an interim final basis under the "good cause" exemption of the APA. The Agency, concerned about the dangers that may be posed by a discontinuity in the regulation of hazardous waste, reinstated the rules on an interim basis under section 553(b)(3)(B) of the APA (57 FR 7628; March 3, 1992).

In the May 19, 1980, preamble to the "mixture" and "derived-from" rules, EPA recognized that designating all waste mixtures and derived-from wastes containing listed wastes as hazardous wastes may lead to some wastes unnecessarily being managed under subtitle C (45 FR 33095). Given the information available on industrial wastes in 1980, and the waste management practices in effect at that time, the Agency was concerned with generators evading subtitle C requirements by simply commingling listed wastes with nonhazardous solid waste. The Agency believed that the delisting program would provide individual facilities relief by excluding a waste mixture and derived-from waste if the facility could show that the waste is not hazardous.

With nearly twelve years of experience implementing 40 CFR part 261, regulators are in a much better position to make judgments about the degree of risk presented by certain wastes. The Agency recognizes that the "mixture" and "derived-from" rules have resulted in unnecessarily stringent requirements for certain low risk wastes. The reinstatement gives EPA the

time needed to sort through the implications of alternative regulatory approaches without jeopardizing human health and the environment. Comments received on both the reinstatement notice and a notice of proposed rulemaking soliciting comment on other approaches to regulating waste mixture and residues (57 FR 7636; March 3, 1992) will be made part of the record of this final rule and will be considered in combination with comments received on today's proposed action.

Because EPA anticipates that it may take up to one year to finalize any alternative regulatory approaches, the Agency added a termination date of April 28, 1993 to the reinstated rules. The unmodified "mixture" and "derived-from" rules will expire on April 28, 1993, unless EPA, after considering comments, acts to change this provision.

#### *C. Relationship of Today's Proposed Action to Current Hazardous Waste Identification Program*

Currently, listed wastes (including wastes derived from or mixed with listed waste) remain hazardous unless they are delisted according to general procedures set forth in 40 CFR 260.20 and specific delisting procedures set forth in 40 CFR 260.22. Today's proposal presents a number of options under consideration by the Agency where regulation of listed hazardous waste under the jurisdiction of RCRA subtitle C would cease without the need for a delisting petition. Today's proposal addresses wastes, contaminated media, and other materials (e.g., contaminated rags, absorbents) that, under current rules, continue to be designated as "hazardous wastes" despite treatment and detoxification that reduces constituents concentrations to levels of minimum risks. With respect to the existing subtitle C continuum of control, promulgation of one of these options would represent the line of demarcation below which wastes would no longer require subtitle C control.

Today's proposal provides the opportunity for self-implementing exemption through demonstration that wastes or contaminated media contain relatively low levels of hazardous constituents. While facilities generating such wastes can petition for delisting by rulemaking, today's proposal would not be as resource intensive to the Agency nor as time-consuming to the regulated community. In addition, the Agency hopes to create incentives for effective and innovative treatment and reduce unnecessary demand for subtitle C disposal capacity.

In today's action, the Agency proposes to remove the termination

provision (*i.e.*, 40 CFR 261.3(e)-Sunset Provision) from the "mixture" and "derived-from" rules. Upon final promulgation of one of the options noticed in today's action, the "mixture" and "derived-from" rules will remain, but their scope will be limited. For the set of options under the first conceptual approach, the exemption levels would supplement the current de-listing process rules providing an easier way to exempt a particular waste. For the set of options under the second conceptual approach, the mixture and derived-from rules would not apply to any waste which would otherwise be covered under the characteristics approach. These solid wastes would be managed as hazardous as long as they exhibit a characteristic.

#### *D. Chemical Manufacturers Association Rulemaking Petition*

The Agency has received a rulemaking petition from the Chemical Manufacturers Association (CMA) to establish concentration-based exemption criteria for the mixture rule, derived-from rule, and contaminated media rule/interpretation." CMA submitted this petition because it believes that the mixture rule, derived-from rule, and contaminated media rule/interpretation are over-inclusive in that they require hazardous waste management of mixtures, residues and contaminated media that contain "innocuous" levels of hazardous constituents. Because CMA's petition is included as one of the options presented in today's proposal (*i.e.*, Option 1), the Agency believes that today's notice serves as a tentative response to this petition, in accordance with 40 CFR 250.20(c).

#### *E. Legal Authority for Defining Hazardous Waste Based on Actual Management Practices*

As noted above, section 1004(5) of RCRA defines "hazardous waste" to include solid waste which, because of its quantity, concentration, or characteristics "may . . . pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Section 3001 required EPA to establish criteria for listing or otherwise identifying hazardous waste "which should be subject to" subtitle C hazardous waste management requirements, taking into account a variety of hazardous properties, such as toxicity, persistence, and degradability. EPA has established the criteria for listing hazardous waste in 40 CFR 261.11

and for identifying hazardous waste characteristics in 40 CFR 261.10.

Since 1980, EPA has implemented the section 1004(5) definition by considering the plausible types of mismanagement that a waste could be subject to and determining the hazards presented by the waste under that scenario. See 45 FR 33113 (May 19, 1980); 55 FR 11800 (March 29, 1990). Thus, in analyzing whether a waste should be identified as "hazardous" EPA has not generally determined whether that waste is in fact mismanaged under the scenario, but only whether it could be. Thus, EPA's hazardous waste definitions capture wastes which could be hazardous if mismanaged, not wastes which are necessarily hazardous under all circumstances.

As explained in more detail below, however, EPA does not believe that the statute requires that the hazardous waste designation always assume mismanagement of the waste in question. Moreover, because the Agency has acquired 12 years of experience in implementing the hazardous waste program and a more detailed knowledge concerning actual waste management practices, the Agency believes that it is appropriate to begin tailoring the scope of its hazardous waste program to reflect how wastes are actually managed, rather than how they might be managed under a worst-case analysis. Today's rule reflects this more tailored approach.

This approach is authorized by the definition of "hazardous waste" in RCRA section 1004(5). Section 1004(5)(B) defines as "hazardous" wastes which may present a hazard "when mismanaged," thus authorizing EPA to determine whether, and under what conditions, a waste may present a hazard and regulating the waste only under such conditions, *i.e.*, when mismanaged. (Note that this in contrast to section 1004(5)(A) under which EPA regulates as hazardous wastes which are inherently hazardous no matter how managed.)

In addition, EPA believes that section 3001 provides EPA with the flexibility to consider the necessity for, and appropriateness of, hazardous waste regulation for wastes which meet the section 1004(5) criteria. Section 3001 specifies that EPA must make a determination of whether such wastes "should" be subject to the provisions of subtitle C in determining whether to list or otherwise identify wastes as hazardous under that section. Thus, section 3001 authorizes EPA to determine whether subtitle C regulation is appropriate in determining whether to designate a waste as "hazardous." EPA

thus may determine that subtitle C regulation is not appropriate because such wastes are not "hazardous" when properly managed and, based on information available to the Agency, unlikely to be mismanaged. Regulation of such wastes under subtitle C would not be "necessary to protect human health or the environment" (see RCRA sections 1003(a)(4), 3002(a), 3003(a), 3004(a)).

Moreover, EPA interprets its existing regulatory criteria for listing hazardous waste as providing the flexibility to consider actual management of the waste in order to determine whether to designate such waste as "hazardous." EPA's listing criteria at 40 CFR 261.11 include such factors as the plausible types of improper management to which the waste could be subjected and actions taken by other programs to address the hazards posed by the waste and any other appropriate factors. Where mismanagement of the waste is likely to be implausible or has been adequately addressed by other programs, EPA need not list the waste as hazardous under the regulatory criteria. Similarly, EPA's criteria for identifying hazardous waste characteristics codifies the statutory definition of hazardous waste and thus provides EPA with the same flexibility accorded by the statute to consider actual management practices in determining whether a waste is hazardous.

### III. Options for Establishing Hazardous Waste Identification Criteria

#### A. Overview of Approaches

The purpose of today's proposal is to establish criteria where the regulation of listed hazardous waste under the jurisdiction of RCRA subtitle C, the federal hazardous waste management system, ceases. The first approach presented proposes consistent and generic risk-based exemption levels for exiting subtitle C management. These exempting criteria can be based on risk, technological performance, or a combination of both. The second approach proposes consistent and generic exemption levels for both entering and exiting subtitle C management using hazardous waste characteristics. To implement this approach, new characteristics could be added or the scope of the existing characteristics expanded, or both. Additionally, a contingent management system based on the concept that disposal can modify the actual risk posed by a waste, could augment either approach and is proposed as well. Lastly, three alternatives are proposed

for establishing exemption levels for media contaminated with listed hazardous waste. The Agency is proposing and setting forth these approaches for comment today.

The first approach involves setting a single risk-based number for toxicants in the listed waste. To exit subtitle C regulations as a listed hazardous waste, the waste (and waste mixed with, derived from, or containing listed wastes)<sup>2</sup> toxicants must be in concentrations less than or equal to the numeric exemption criteria. These concentration-based exemption criteria (CBEC) could be determined by estimates of residual risk, by the performance of treatment technologies, or by some combination of both.

The second approach relies on the current characteristics approach, modified by expanding the number of toxic constituents listed in Toxicity Characteristics (TC). Since hazardous waste characteristics determine both entry and exit from the hazardous waste management system, any waste, waste mixture, treatment residual, contained-in waste, or contaminated media could exit subtitle C control if the generator determines that a representative sample of the waste no longer exhibits any of the four types of characteristics: ignitability, corrosivity, reactivity, and toxicity. Today's notice presents an option under this approach—the Enhanced Characteristics Option (ECHO)—in which the Toxicity Characteristics is expanded. Since ECHO would expand the scope of a characteristic, this approach is the only one presented today which could bring some new solid waste streams into subtitle C, while deregulating substantial volumes of wastes currently managed under subtitle C.

These two approaches could be implemented in combination with a "contingent management" approach under which a waste would be exempted from subtitle C contingent upon compliance with certain waste management practices. For example, under the first approach wastes with concentrations higher than the CBEC levels could be conditionally exempt from subtitle C if the waste is managed in certain controlled environments. Under the second approach, wastes which are characteristically hazardous under ECHO could be found conditionally not characteristic if

<sup>2</sup> This approach would be an alternative means for exiting subtitle C and would not replace the generators right to petition the Agency to exempt a specific listed hazardous waste (*i.e.*, delist) from regulation under RCRA subtitle C.

managed under certain conditions. This approach could entail simple management requirements or could be very detailed and address a variety of specific management practices. Later sections of this preamble present different contingent management options.

There are two issues that impact both the CBEC and ECHO approaches. First, an important factor in determining the impact of today's proposal is the relationship between the concentration-based exemption criteria and ECHO levels proposed today and the RCRA land disposal restriction standards.

Section 3004(m) of RCRA requires that hazardous wastes be treated to a level at which "short-term and long-term threats to human health or the environment are minimized" prior to land disposal. In the "Third Third" land disposal restriction rulemaking, 55 FR 22520 (June 1, 1990), the Agency explained in detail its interpretation that the statute leaves to EPA the determination of whether the LDR treatment standards attach at the point of waste generation or at the point of disposal. *Id.* at 22651-22663.

In the Third Third rule, EPA explained why the Agency believed that the point of generation approach would generally better meet the goals and purposes of the LDR program than a point of disposal approach. *Id.* at 22652. However, EPA also explained that the point of disposal approach is appropriate in certain circumstances, such as when applying LDRs at the point of generation would seriously disrupt the implementation of other environmental regulatory programs. *Id.* at 22653. One of the policy rationales for exercising its discretion under the statute to generally require full BDAT treatment for wastes that are hazardous at the point of generation was the inadequacy of existing hazardous waste identification programs; specifically wastes identified as hazardous for a particular characteristic might still be toxic, due to the presence of non-TC constituents, even when that characteristic is removed. See *Id.* at 22652. Such waste thus would not meet the section 3004(m) "minimize threat" land disposal standard even after it is no longer "hazardous".

The decision concerning which LDR approach to utilize with respect to the low hazard waste subject to today's proposal may significantly affect the practical impact of the options proposed today. For example, a waste which is hazardous when generated but treated to CBEC or ECHO levels may still, under a point of generation approach, require treatment to any more stringent LDR

level prior to land disposal. Thus, many CBEC or ECHO wastes may require LDR treatment prior to disposal in a subtitle D unit.

However, to the extent that the CBEC or ECHO proposal here provide a more comprehensive way of determining the hazards presented by hazardous wastes, requiring treatment beyond the levels at which a waste is hazardous may no longer be necessary to "minimize threats." For that reason, EPA is taking comment on some aspects of adopting the point of disposal as the point at which LDR standards attach as one alternative way of addressing the interaction between the CBEC and ECHO approaches proposed today and the RCRA land disposal restrictions. For example, the Agency is considering this alternative in addressing the problems raised by the cleanup of contaminated media (see further discussion in section III. E.) In addition, under the ECHO approach, EPA is requesting comment on this alternative for addressing the issues raised by the land disposal restrictions' relationship to characteristic wastes. EPA requests comment on this issue.

Section 3004(m) of RCRA provides that treatment standards for hazardous waste prior to land disposal cannot be below levels at which "short-term and long-term threats to human health and the environment are minimized." See also *HWTC v. EPA (HWTC III)*, 886 F.2d 355, 362 (D.C. Cir. 1989), *cert. denied* 111 S.Ct. 139 (1990). To date, the Agency has been unable to define risk-based levels which meet the section 3004(m) standard. See 55 FR 6640 (February 26, 1990). EPA expects to address the issue of the relationship between the BDAT standards and the section 3004(m) "minimize threat" standard in more detail in the upcoming LDR "phase two" proposal, to be published this summer. However, EPA also recognizes that the levels proposed in this rule can be related to the "minimize threat" standard; therefore, as a second way of addressing this issue, the Agency is proposing that any exemption criteria promulgated will become minimized threat levels for the LDR program. If the CBEC or ECHO levels are also the "minimize threat" standard, then wastes that are treated to levels below the exemption level would also have met their obligation under the LDR program and could accordingly be land disposed without further treatment. The Agency asks for comment on whether the levels proposed in this rule should be the "minimize threat" level that bounds the LDR treatment standards.

The second issue concerns State programs. To the extent any of the

options are a narrowing in scope of the, or establishing a less stringent, federal program, these new exemptions will have little practical impact unless and until adopted by States. As a result, it is very important to the Agency that we receive State input on the options presented here. EPA intends to work closely with its counterparts in State governments to develop and implement HWIR options.

The following options discussed in today's proposal are presented for comment. The Agency specifically requests comment on all aspects of these options, including the exposure scenarios on which the levels were developed as well as the levels themselves.

#### *B. Concentration-Based Exemption Criteria (CBE) Approach*

As stated above, the first approach involves establishing a single set of numeric criteria where RCRA subtitle C jurisdiction ends for listed wastes. Under this set of options, numeric levels for wastes can be set generically for all constituents found in waste streams. When a waste contains constituents at concentrations at or below these levels, management requirements are left to the subtitle D program and the States. The levels could be a risk-based number, a technology-based number, or a combination of the two. Wastes that contain toxicants at concentrations below the exemption levels would not be regulated under subtitle C.

Under this approach, the Agency is proposing to establish generic exemption levels for hazardous constituents found in listed hazardous wastes using a risk-based approach. These exemption levels represent baseline levels (*i.e.*, levels that the Agency believes are not hazardous, and therefore, should not be regulated under the subtitle C program). These numbers, for the first three options, would apply generically to all wastes regardless of their ultimate disposal manner or their origin. Although there are many ways to define the point where the risk presented by wastes is below the hazardous level that determines subtitle C jurisdiction, today's notice offers three options. The Agency has evaluated the risk for all options in terms of the hazard posed to humans due to groundwater contaminated by toxic constituents leaching from a waste, with the groundwater used as source of drinking water by an individual over a period of time. The proposed risk-based exemption levels are based on Maximum Contaminant Levels (MCLs) proposed or promulgated under the Safe

Drinking Water Act. Otherwise, Risk Specific Doses (RSDs) and Reference Doses (RfDs) are utilized for carcinogens and systemic toxicants, respectively. Listed waste which leaches toxicants at concentrations lower than the exemption levels would no longer be regulated as hazardous. Toxicant leach levels in waste are determined using the Toxicity Characteristics Leaching Procedure (TCLP). The TCLP is discussed in section VI of today's notice. Appendix 1 lists the health-based number for each of toxicant in alphabetical order. Alternative exemption levels derived from the same health-based numbers are included in this table as well.

An alternative exposure scenario which could be evaluated is direct human exposure to the waste through incidental ingestion. The Agency requests comment on the appropriateness of the contaminated groundwater exposure scenario and alternative scenarios. Exposure assumptions, scenarios, and simulation techniques are fully discussed in section VI of this document.

The Agency will rely on scientific evidence used in past rulemakings (*i.e.*, the TC rule)<sup>3</sup> and the information presented in section VI of today's proposal to evaluate the CBEC levels. However, the Agency today requests comment on two different approaches to setting those levels: a single multiplier (100, 10, 1, etc.) for all constituents or an individual multiplier for each constituent.

Under the first of these alternatives, EPA would assign a single multiplier for each constituent. A multiplier of 100 was used for the constituents in the 1980 Extraction Procedure (EP), for example. As discussed in section VI, this multiple incorporates the expected physical dilution and attenuation of a constituent. This approach assumes that the same value adequately represents the dilution and attenuation characteristics of all the constituents in different chemical classes—metals, aromatics, phenols, and others. A single multiplier may reduce the administrative burden and complexity for the Agency and the regulated community.

EPA prefers the use of a single multiplier for all constituents because it could easily be implemented within the timeframe EPA has set for promulgating interim improvements to the mixture

and derived-from rules. The Agency requests comments on this alternative and the appropriate level of the multiplier.

Under the second alternative, EPA would determine constituent-specific multipliers for all constituents. For example, EPA could determine separate multipliers for each constituent (*i.e.*, the multiplier for silver could be 10, while the multiplier for phenol could be 10,000, and so on for each appendix VIII constituent). Recently, EPA has been developing constituent-specific multipliers (see 55 FR 11798; March 29, 1990). While a major expansion of this effort could pose significant challenges to the Agency's resources in the short-run, it would also allow EPA to incorporate available information on contaminant fate and transport in the environment. It would also better tailor the regulation of a constituent to the potential threat that a chemical poses to human health and the environment through different routes of exposure. The Agency requests comments on this alternative.

EPA believes there are at least three choices for developing levels for CBEC. One is to determine levels the Agency is very confident do not pose a risk, such as using a multiplier of 1 to develop regulatory levels from MCLs. EPA believes that a multiplier of 10 might also be justified under this approach; it is derived from using the EPACML model and the assumptions described in more detail in section VI, using the 95th percentile on the curve. This percentile is higher (more protective) than the level used in deriving TC levels. The multiplier of 100 represents another approach which is to develop a level that EPA concludes is the demarcation of where the Federal interest in regulating wastes ends. Under this approach, the multiplier of 100 is based on using the 85th percentile as was done to develop TC levels.

#### Option 1: Health-based Numbers (HBN) × 100

The first option would establish the generic exemption levels one hundred times the health-based number. That is, listed waste which leaches toxicants at levels one hundred times or less the corresponding health-based number would no longer be regulated as listed hazardous wastes. This option was suggested to the Agency by the Chemical Manufacturers Association (CMA) in a petition for rulemaking in 1989. This option is also the same approach that was used to establish TC levels. At that time, EPA considered these to be levels which identify wastes that are "clearly hazardous".

EPA is considering CBEC at 100 times health-based numbers for a number of reasons. First, such an approach would harmonize the listings and characteristics programs by using the same number used for the TC. EPA has received numerous requests for a straight forward approach to identifying hazardous wastes. Choosing a multiplier of 100 would unify both the TC and the exit level for listed waste thereby simplifying hazardous waste identification while allowing for a concentration-based exemption. (If future modifications to the TC involve changing the multipliers, EPA currently expects that the Agency would consider making parallel changes to the CBEC levels.)

A multiplier of 100 corresponds to a cumulative frequency close to the 85th percentile from the EPACML simulations used to support the TC rule. In other words, in this exposure scenario, an estimated 15 percent of the drinking water wells closest to unlined municipal landfills could have contaminated concentrations above MCLs, if the landfill within a mile of the well receives wastes at or just below the possible exemption levels of 100 times the health-based numbers. As the distance between a landfill and a well increases, the probability of exceeding MCLs decreases. It is important to note that the information on landfills used for this analysis is at least six years old, and conditions such as size, proximity to drinking water wells, management practices, disposal practices, etc. may have changed.

#### Option 2: HBN × 10

Another option for establishing numeric exemption criteria would be setting criteria at ten times the health-based numbers. That is, listed waste which leaches toxicants at levels ten times or less the corresponding health-based number would no longer be considered hazardous. Therefore, this option is slightly more protective than the delisting program which exempts specific listed hazardous waste from subtitle C regulation using somewhat more conservative multipliers depending on volume (see delisting discussion, section XIII). A multiplier of 10 corresponds to approximately the 95th percentile levels generated from EPACML simulations used to support the TC. This means that an estimated 5 percent of the wells closest to unlined municipal landfills will experience concentrations of leachate above health-based numbers, as surveyed in 1986 (EPA Solid Waste (subtitle D) Landfill Survey, 1986). At a multiplier of 10, EPA

<sup>3</sup> The Toxicity Characteristics (TC) rule (see 55 FR 11828, March 30, 1990) currently list 39 different constituents and whose health-based number are multiplied by 100. EPA deferred additional organic constituents until better health data and models became available.

believes it is possible, but unlikely, that any individual will be continuously exposed at concentration above health-based levels of concern for any pollutant.

Preliminary analysis performed by the Agency indicate that a few treatment residuals and very dilute waste mixtures, such as waste waters, may be exempted from subtitle C control under this option. This option may have little practical impact on other low waste mixtures and treatment residuals. See appendix 1 in appendix X where these exemption levels are listed.

#### Option 3: HBN With a Multiplier of 1

Yet another option establishes numeric exemption criteria for toxicants in wastes at concentrations equal to the toxicants' health-based number. Health-based numbers are concentrations below which toxicants are considered by EPA to present an acceptable risk to human health. This option is the most protective option presented for comment today. These levels are considered protective even under worst case exposure scenarios. Preliminary analysis performed by the Agency indicates that because the risk presented by wastes that meet this exemption criteria are *de minimis*, very few treatment residuals and only extremely dilute waste mixtures may be exempted from subtitle C control under this option. Therefore, this option will have little practical impact on low hazard waste mixtures and treatment residuals.

#### Option 4: BDAT

Under this option, the Agency is proposing that listed hazardous waste which has been treated to the applicable treatment standard would also be exempt from subtitle C management. Technology-based generic exemption levels could be developed by establishing numbers based on toxicant concentration levels found in waste residuals which have been treated using proven treatment technologies. This approach, which is consistent with the LDR program, would require that all listed hazardous wastes meet treatment levels prior to disposal. The Land Disposal Restrictions (LDR) Program establishes treatment standards for hazardous wastes. Persons managing those wastes must demonstrate that their wastes meet these standards before the wastes can be land disposed. The standards are promulgated in subpart D of 40 CFR part 268. While some of these standards require that certain wastes be treated by specific treatment technologies before land disposal, the majority of the treatment

standards are numerical standards for subsets of toxicants commonly found in individual listed wastes. These standards were developed by evaluating the effectiveness of the best demonstrated available treatment (BDAT) technologies for individual listed wastes. If the numerical BDAT technology standards for individual waste streams were used as exit criteria for listed hazardous waste, residuals which were treated in accordance to BDAT would no longer have to be managed in a subtitle C facility when disposed. The BDAT standards, as currently promulgated, are solely technology-based and do not consider risk. As a result, the treatment standards are in some cases higher and in other cases lower than risk-based levels discussed above. Setting exemption criteria equal to LDR treatment standards implies that the treatment standards render the risks presented by wastes to acceptable levels given the use of best demonstrated available technology.

The Agency believes BDAT levels *per se* are inappropriate as exemption criteria, because these levels are purely technology-based and do not consider risk. However, the use of these levels as CBEC has been suggested to the Agency because in many cases treatment to these levels can substantially reduce the risk presented by the waste, these levels are widely implemented throughout the hazardous waste program, and often these levels result in wastes that are below or close to the risk-based levels of some of the options discussed above. The use of BDAT levels as exit criteria gives more confidence to some interested parties who prefer to rely on the performance of technology, rather than the performance of risk assessment. Therefore, the Agency requests comment on the appropriateness of considering these levels as CBEC.

#### Option 5: BDAT Capped With HBN

Another option the Agency is proposing for comment today is to establish generic exemption levels through a combination of the technology and risk options discussed above. These options could be merged in different ways to modify an approach based on BDAT levels. The first, is to recognize that there may be some wastes for which there is some significant residual risk even after achieving technology-based treatment levels. There may be some wastes for which best demonstrated and available treatment technology cannot routinely get below the figure of 100 times health-based levels, for example. Under this option,

for those wastes, a risk-based leach level such as 100 times health-based numbers would be the CBEC level rather than the BDAT standard.

Finally, EPA notes that the concept of merging BDAT and risk-based approaches is complex because BDAT standards are sometimes set as total concentrations in the waste, levels measured in a leach test, or mandated. The Agency solicits comment on the problems that result from that complexity as well as on this approach generally.

As stated in Option 4, some parties prefer BDAT treatment levels because in many cases treatment to these levels substantially reduces the risk presented by the waste and these levels are widely implemented throughout the hazardous waste program. Including either a risk-based modification to these treatment levels retains the advantages of Option 4, while removing some of the disadvantages. The Agency requests comment on the appropriateness of considering these levels as exemption criteria.

#### C. Expanded Characteristics Option (ECHO)

The second conceptual approach is based on the current hazardous characteristics approach for identifying hazardous wastes subject to subtitle C. This approach would establish the same characteristic (concentration) threshold for determining whether a waste stream would be covered as a subtitle C waste (*i.e.*, "entry" to the subtitle C waste system) and when a waste stream would be exempt from subtitle C regulation. Therefore, RCRA characteristics—ignitability, reactivity, corrosivity, and toxicity—would determine both entry to and exit from the hazardous waste management system; this would assure a consistent regulation of wastes. This rationalization of entry and exit constituent levels would dramatically simplify waste identification under the RCRA regulatory system.

There are three important advantages to such an approach. First, the characteristic approach would largely replace the current approach based on the combination of waste listings and the "mixture" and "derived-from" rules. As noted above, this system has required the management of millions of tons of low risk wastes within the subtitle C hazardous waste management system. The characteristic approach would tailor waste management requirements to levels the Agency believes minimizes the short- and long-



term threats to the protection of human health and the environment.

Second, the characteristic approach would also provide important programmatic advantages over the concentration-based approaches outlined above. Currently the Agency must devote significant resources to investigate and list each hazardous waste stream. At the current pace, listing all potentially hazardous waste streams could take several decades. By developing a set of comprehensive hazardous waste characteristics, the Agency could reallocate its resources away from waste stream identification and focus instead on ensuring that generators properly carry out the tests to determine whether their solid waste exhibits a characteristic.

In addition, this approach will give generators and waste handlers substantial incentives to develop new information about the characteristics of their waste streams. Under the concentration-based approach, generators, etc. have little incentive to develop such information and, as a consequence, EPA must devote substantial resources to develop information on the transport and fate of waste constituents in the environment.

Third, the characteristic approach would achieve a much larger portion of the potential cost savings associated with addressing the overly broad regulation of wastes under the current "mixture" and "derived-from" rules.

Therefore, the Agency is proposing the Enhanced Characteristic Option (ECHO) below as a way to move to a system of characteristics. The Agency requests comment on all aspects of this issue.

#### Option 6. ECHO

EPA has developed four "characteristic" tests for identifying hazardous waste—the Corrosivity, Ignitability, Reactivity, and Toxicity characteristics. This approach would rely on this set of characteristics, augmented by a substantial revision of its toxicity characteristic test to address the chronic and carcinogenic effects of as many additional appendix VIII constituents as possible. The current Toxicity Characteristic (TC) was devised to address the potential adverse health-based effects of 39 heavy metal and hazardous organic constituents when improperly placed in an unlined landfill.

Under this option, the Agency would expand the Toxicity Characteristic from its current list of 39 (40 CFR part 261) appendix VIII hazardous constituents to as many appendix VIII constituents as possible. The TC then would address all

of the chronic and carcinogenic effects of the appendix VIII constituents for which there is a peer-reviewed health based concentration level and an analytic method for detecting the constituent.

During the TC rulemaking, the Agency received many comments from the environmental community suggesting that the Agency expand the TC to consider other toxicants in addition to the 39 incorporated in the final rule. The ECHO would respond to those concerns.

As in the current TC rule, the characteristic level for these new constituents would be a multiple of the health based limit (HBLs). The multiple would be derived from the EPA Composite Model for Landfills (EPACML) to reflect the diffusion and attenuation of the constituent during ground water transport.

In addition to determining the scope of the expanded toxicity characteristic, the Agency must determine the characteristic level for each constituent. As discussed in Option 1 above, there are two options: A single multiple above the health-based limits for all appendix VIII constituents or constituent-specific multiples which vary for each toxicant. Since ECHO could potentially expand the waste streams regulated under subtitle C, EPA believes that constituent-specific characteristic levels are appropriate. As described in section IV, the Agency has information for approximately 200 constituents and is requesting any additional data to assist the Agency's efforts in making these determinations. If constituent specific data is not available, EPA will use a DAF of 100 for the remaining constituents with health based levels and verifiable test methods. The Agency would propose that this level minimizes short and long-term threats to human health and the environment for all constituents since it is based on very conservative physical dilution and attenuation assumptions. (See section VI for further discussion of exposure pathways and EPA's proposed justification of this finding.)

As explained later in this notice, EPA has quantifiable health risk data and appropriate analytic methods for about 200 constituents now in appendix VIII. It is these constituents which would be added to the TC under ECHO. For listed wastes containing other toxicants for which data is not available, the mixture and derived-from rules would continue to apply. In addition, testing methods would have to be available for detecting the constituents in the waste. Thus, under ECHO, the TCLP or other EPA approved test method would be used.

Section IV describes the constituents eligible under this proposal.

Although implementation issues are discussed in more detail in section XI, the Agency summarizes them here. Under this option, generators who currently manage a listed waste would have to submit a one-time notification to the Agency that their previously listed waste now does not exhibit a characteristic. Generators would have to submit testing information and a certification to verify their claim. The Agency considers this one-time notification essential to its proper management of a transition from the current hazardous waste identification and tracking system to a system under ECHO. EPA would need to receive notice of changes in the status of these waste streams in order to allow EPA to review and enforce against changes that are not properly supported.

After the one-time notification, the ECHO approach would be implemented like the current characteristic system. Generators are responsible for determining whether their waste exhibits a characteristic. Generators may either test their waste or use their knowledge of the waste to determine whether it is characteristic. As envisioned under EPA's 1978 hazardous waste identification proposal and under this approach, the list of hazardous waste list would serve as a default list to allow generators an alternative method to identify (without the burden of continually having to test their wastes) those waste streams which almost always exhibit at least one characteristic. Generators of a listed hazardous waste could simply manage the waste stream under subtitle C.

#### Contingent Management Approach

The previous options for listed hazardous waste apply in all situations and, therefore, do not reflect the fact that the way in which waste is managed can modify the actual risks posed by a waste. If a waste is placed in a protectively designed landfill, the actual risk posed by the waste is significantly reduced. Therefore, EPA is also presenting several "contingent management" options, under which the ultimate disposal of a waste may influence the level at which it is exempted from subtitle C. The basic reasoning is that if a waste is managed safely, the criteria against which it is judged can be less stringent. Proven safe disposal can allow more concentrated waste out of subtitle C without increasing risk to human health and the environment so long as the waste is disposed of in accord with the



contingent management criteria. This approach could complement either the CBEC or the ECHO approaches.

If wastes could exit subtitle C control at different concentration levels contingent upon different waste management practices, the Agency will have made a significant step in transforming the current binary regulatory system (subtitle C/not subtitle C) to a system more focused on risk. Such a system could better tailor regulatory control to the variations in potential risks posed by the large volume of waste materials currently subject to subtitle C regulation.

To decide on the appropriate management practices that afford assurance that wastes leaving subtitle C control will be well managed, the expected route of potential exposure must be determined. The Agency is in this proposal limiting its contingent management options to wastes disposed of in landfill. In previous rulemakings, the Agency has determined that the primary route of exposure will be consumption of groundwater contaminated with leachate from the disposal landfill. Therefore, the Agency is today presenting contingent management options which diminish the likelihood of the occurrence of this route of exposure.

As discussed in section IX of this proposal, the Agency has modeled environmental releases from landfills using the EPACML model. The model was constructed to simulate the potential hazards from mismanagement of hazardous waste. In summary, the model assumes that hazardous waste is placed in an unlined, municipal solid waste landfill. Precipitation falls on the landfill and leaches hazardous constituents as it moves through the landfill. Leachate from the landfill then flows through the soil to the groundwater and then to drinking water wells.

Under the contingent management approach, the Agency intends to focus on actual management, not mismanagement, conditions if they can be reasonably assured. Thus, there are many potential ways to use the EPACML model to reflect actual conditions. For example, in section IX of today's notice, the Agency proposes using a less acidic leaching procedure to better model the actual leaching process if waste is placed in a monofill (i.e., not co-disposed with municipal solid waste).

The EPACML model was not specifically developed for modeling potential ground water contamination at individual sites. Rather, its purpose was to provide the Agency with a tool for projecting impacts to ground water on a

national basis. Although the CML model is used in making delisting determinations (see 56 FR 32993, July 18, 1991), the volume of waste is the only parameter which is varied. The model is not recommended for developing site-specific DAFs taking into account the exact physical/chemical attributes of a site. Instead, the Agency requests comment on whether to and how to tailor DAFs to site conditions. Can this be done on a national basis, using certain factors that can be projected to affect DAFs uniformly across the country? Or should DAFs be tailored specifically to a site, using the conditions of the site and a more appropriate site-specific model to adjust the DAFs? Can a system using a combination of both approaches be employed?

The contingent management options presented in today's Notice involve consideration of five specific factors which affect DAFs. Each involves the actual conditions existing at a landfill site. Those conditions can act individually or in combination to mitigate the potential for leachate to contaminate ground water. The five factors are described below.

First, one factor influencing contingent management option is disposal in a lined landfill with specific design criteria. The Agency promulgated on October 9, 1991 performance and design criteria for subtitle D municipal solid waste landfills (see 56 FR 50978). To satisfy the performance standard, these criteria require a low hydraulic conductivity soil cover on the landfill and a composite liner, consisting of flexible membrane liner and a two-foot barrier soil layer under the landfill.

Second, the amount of potential exposure also varies with the average amount of precipitation that falls on a landfill. Precipitation is the primary source of leachate; lower amounts of precipitation would cause less leachate and less leachate migration beyond the barriers of the landfill. Another possible contingent management option would determine different DAFs based upon the average expected precipitation rate in the region the landfill is located. The Agency could determine geographic regions based upon climatic zones, could require precipitation data from the most appropriate certified rain gauge, or could require site-specific information. However, in order to do this the Agency would need to verify that the other model inputs are appropriate for each of the regions or else develop new region-specific inputs. Therefore, the Agency solicits data and comment on technically appropriate ways to set DAFs based on rainfall levels.

A third factor which could warrant a contingent management option is the size of the landfill. In the TC rulemaking, the Agency used a national distribution of municipal landfill sizes—an appropriate approach given the national scope of the regulation and the assumed mismanagement scenario. The Agency recognizes that the DAF varies significantly with the size of the landfill. For any given distance from the landfill boundary, larger landfills have lower DAFs. Therefore, when considering actual management practices at specific landfills, the size of the landfill will be known. One of the contingent management options below is to allow a landfill to petition for a specific DAF (and thus contingent exemption from subtitle C under CBEC or ECHO) based on the landfill size. EPA points out that this is similar to the delisting program where the volume of waste dictates the DAF used, thus implicitly taking landfill size into account. The Agency notes that landfills which accept only hazardous or industrial solid waste are generally smaller than municipal solid waste landfills.

A fourth factor which significantly influences the potential migration of contaminants is the hydraulic conductivity of the soil surrounding the landfill. If leachate infiltrates out of the landfill, it must flow through the surrounding soil to reach a well or surface water body. If the hydraulic conductivity of surrounding soil is relatively low—such as in soils dominated by clays—then the flow of any potentially contaminated leachate could be effectively retarded for long periods of time. Thus, the Agency believes that landfills located in soils with low hydraulic conductivities (for example,  $10^{-6}$  cm/s or lower) could provide an extra level of environmental protectiveness worthy of a contingent management exemption option. EPA believes this factor may not be appropriate to generate national DAFs, using the EPACML model since the other model inputs may also vary in areas of soils with low hydraulic conductivity. The Agency seeks comment on several implementation issues for this option. The Agency could issue national DAFs or multiples above existing DAFs corresponding to different hydraulic conductivities—one for  $10^{-6}$  cm/s, one for  $10^{-7}$  cm/s, etc. Alternatively, the Agency could require petitioners to obtain site-specific measurement of local soil conductivity. If the Agency asked for site-specific information, the Agency requests comment on the level of detail

appropriate for a contingent exemption based on soil conditions.

Finally, the fifth possible contingent management factor would be a demonstration that no operating drinking water wells lie within a specific radial distance from the facility. To account for this factor, landfill operators could show that if the nearest drinking water well was a certain radial distance (1000 feet, 2000 feet, etc.) from the facility, the landfill could manage wastes contingently exempt from subtitle C at a higher concentration than excluded under CBEC or ECHO. This higher concentration level or DAF could be determined with the EPACML. The Agency requests comment on how, under such an approach, a facility could assure that wells would not be located closer to the site in the future.

#### Contingent Management Options

In today's Notice, EPA is proposing two alternative approaches combining the structural approaches outlined above (*i.e.*, CBEC and ECHO) with contingent management. The first one involves setting exemption criteria contingent on disposal in a landfill meeting certain design requirements. This option would apply nationally rather than on a site-specific basis. The second option involves determining a threshold at which a waste would become characteristically hazardous even with disposal in a landfill with specific design criteria dependant upon size, location, and climatic conditions. These, too, would be applied on a national basis. Finally, the Agency is also interested in comment on applying the contingent management approach on a site-specific basis by altering the exemption criteria based on the site-specific conditions of hydraulic conductivity and the distance to a private drinking water well.

#### Option 7. CBEC Modified by Contingent Management

The Agency is proposing a hybrid option which incorporates aspects of the risk-based, technology-based and contingent management options discussed above, for establishing a concentration-based exit from subtitle C. This option establishes two sets of risk-based levels: one set is more conservative and does not condition subsequent management of the waste (tier 1); the second set is less conservative and requires subsequent management of the waste in a specified manner (tier 2). If listed hazardous wastes (including residuals and mixtures) leach concentrations of toxic constituents at or below the more conservative set of health-based levels,

the waste would no longer remain under subtitle C jurisdiction (note: these wastes will still remain subject to the characteristics defined at 40 CFR 261 subpart C). This set of risk-based levels are the levels described in the first set of options where wastes, treatment residuals, and waste mixtures, which contain levels of toxicants at or below the risk-based exemption levels would be exempt from subtitle C control. These levels might also be considered minimum threat levels under section 3004(m) of RCRA (*i.e.*, the LDR program) meaning that BDAT treatment would not be required below this level. The Agency is proposing that these levels (tier 1) be ten times the health-based number for each toxicant, which is slightly below the most conservative levels for which wastes have been delisted. The Agency believes that selecting these levels, which are presented in Appendix 1 of today's notice, would be one way to harmonize today's proposed rule with other RCRA programs. This factor (10) represents a level which may be fully protective in the context of setting national levels at which subtitle C jurisdiction ends. A multiplier of 10 corresponds to approximately the 95th percentile levels generated from EPACML simulations used to support the Toxicity Characteristics (TC) rule (See 55 FR 11826). For situations where unusual site conditions may dictate a factor of less than 10, the Region or authorized State would be able to require, as necessary, a more stringent factor (See Regional Override Authority discussion in section IX of today's notice). The Agency requests comment on the appropriateness of selecting a factor of 10 times health-based numbers for levels where subtitle C jurisdiction ends without condition of subsequent management.

The second set of risk-based exemption criteria (tier 2) is contingent upon specified waste management. Today's notice is proposing, as a first phase, to allow only listed hazardous wastes which has met the applicable Land Disposal Restriction (LDR) treatment requirements to be eligible for the contingent management exemption (contaminated media are addressed separately in Today's proposal). Once the LDR requirements are met, concentrations of toxic constituents which leach from the residual are compared with the less conservative set of health-based exemption levels which is tied to specific management standards. The Agency is proposing to establish the less conservative set of risk-based levels at one hundred times

the health number for toxic constituents. LDR residuals which leach toxicants at concentrations greater than ten times the health numbers, but at or below one hundred times the health number and are managed according to the requirements set forth at 40 CFR part 258 subpart D, the municipal solid waste disposal facility design criteria promulgated on October 9, 1991 (56 FR 50978), or State equivalent, will not be regulated under RCRA subtitle C. The municipal solid waste landfill regulations would set out default design and operating requirements. The Agency is proposing less conservative risk-based exemption levels contingent upon management in a landfill that meets specified design requirements because of the degree of protectiveness provided by the design standards. The Agency requests comment on alternative risk-based exemption levels coupled with this management practice as well as other management practices. These levels are also listed in appendix 1.

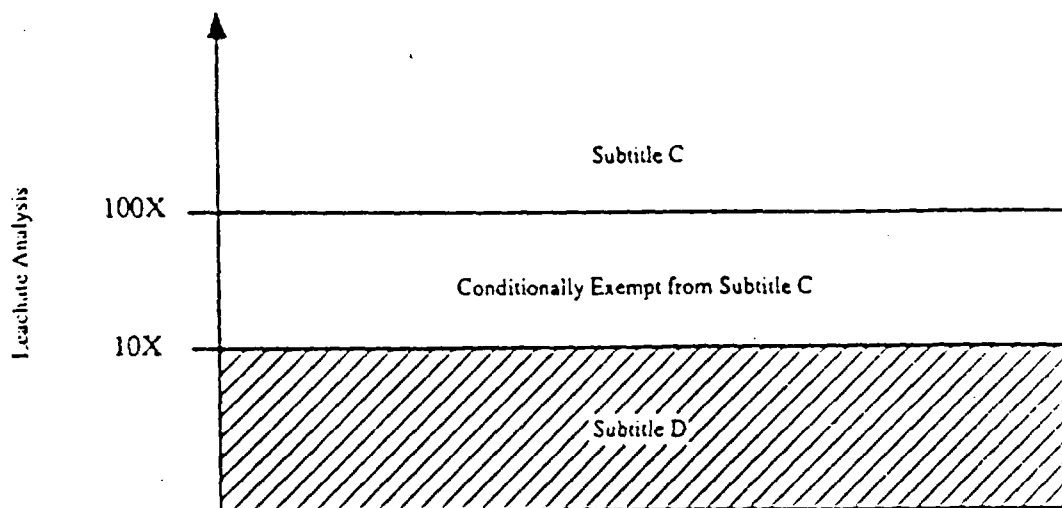
EPA proposes that CBEC wastes in this contingent tier would be able to be exempt based on management in an alternative design approved by the Federal government, either for municipal solid waste (approved through authorization of the State municipal solid waste program) or for CBEC wastes (approved through authorization of the State's hazardous waste program but meeting the design standard for the municipal solid waste landfills in 40 CFR part 258).

EPA proposes that at a minimum, the design and construction requirements of 40 CFR part 258 would be necessary pieces of this conditioned exemption. This would include liners unless there was an approved State alternative design. EPA believes these elements could realistically be installed and relied upon in the context of a self-implementing regulation. The Agency seeks comment, however, on the need for other components of the 40 CFR part 258 standards, including elements such as covers, groundwater monitoring phased in on the same timeframe as for municipal solid waste landfills, financial assurance and others. EPA also seeks comment not just on whether these elements are necessary, but also whether they realistically can be elements of a largely self-implementing, conditional exemption.

Residuals which leach toxicants at concentrations greater than one hundred times the health numbers, even after achieving the specified LDR treatment standards, will remain regulated under RCRA subtitle C. Figure 1 depicts the two tiers of exemption levels and the

jurisdictional authority associated with these levels. The Agency requests comment on all aspects of this proposed option.

Figure 1: Depiction of CBEC Contingent Management Option for Wastes



#### Option 8. ECHO Modified by Contingent Management

The Agency is also proposing today another hybrid option which combines the ECHO structural approach with contingent management options. While the ECHO approach sets uniform entry and exit levels for subtitle C management, for the reasons discussed above the Agency believes that establishing additional exit levels based on specific disposal practices would begin to implement the Agency's contingent management structure and would provide adequate protection of human health and the environment.

Under this proposal the Agency would adopt the ECHO approach discussed above in Option 6 for wastes entering and exiting subtitle C control and site-specific contingent management exemptions.

In the ECHO approach, the characteristic level which determines whether a waste is hazardous under subtitle C is the product of the health-based limit and a constituent-specific factor. The factor reflects the expected dilution or attenuation of the constituent as it moves from the waste to the receptor. In the TC rulemaking and the ECHO approach, the Agency has identified the potential consumption of contaminated groundwater as the key pathway of concern. This pathway, as

modified by EPACML, will be used to develop new, higher thresholds at which a waste would become characteristically hazardous even with managed disposal.

Therefore in considering the greater degree of protection from alternative contingent management options, EPA proposes to develop input data for the EPACML model to reflect the landfill disposal scenarios for each contingent management option. The EPACML will be used to develop new, higher thresholds at which a waste would become characteristically hazardous even with managed disposal.

One contingent management option under this proposal would be disposal in a lined landfill meeting specific design criteria. The Agency promulgated specific design and construction criteria as the default option in the recent subtitle D rulemaking (40 CFR 258). EPA believes these elements could realistically be installed and relied upon for a self-implementing regulation. The Agency proposes to use this data to develop a new, higher threshold at which wastes would become characteristic wastes even though these wastes are disposed in a facility meeting these stringent design criteria. The Agency proposes to set a generic threshold under this option, which, like the TC rulemaking, would be a composite factor to account for

distribution across the continental United States of different soil and climatic conditions. The Agency requests comments on this approach.

Landfill size may also affect the risks associated with waste disposal. The Agency proposes to set different national thresholds for landfills with different sizes. For example, using the EPACML model for a fixed landfill size, the Agency may find that a 40 acre landfill yields a factor of 500 above the health based levels, a 100 acre landfill a factor of 200, etc. The Agency requests comment on this approach.

Another contingent management option would set different thresholds for landfill located in areas with low precipitation. As discussed above, the Agency believes that low precipitation will generate less leachate from a landfill. The Agency proposes to use the same precipitation modeling techniques for setting thresholds under this proposal as was done in the TC rulemaking. The Agency requests comment on this approach. Unlike the other options above, EPA believes that this issue may require changing more than one input parameter in EPACML to derive the appropriate thresholds. For example, two other EPACML input parameters—soil types and depth to the unsaturated zone—vary with the amount of precipitation a region

receives. Therefore, the Agency is proposing that, if EPA adopts this option, it would recalculate the nation weights used in the TC rulemaking to account for the regional limits of this proposal.

Finally, the Agency is considering an alternative option that would allow generators to petition EPA to adjust the characteristic level for wastes based on site-specific conditions. The Agency is considering two contingent management options based on site-specific conditions: one option for landfills located at sites with low hydraulic conductivity and the second option for landfills with wells located within certain greater radial distances from the landfill. The characteristic values for the constituents would be multiplied by a factor which takes into account low hydraulic conductivity or proximity to nearest well to determine the contingent management threshold. The Agency requests comments on alternative site-specific contingent management approaches.

As discussed above, the Agency is concerned that EPACML may not be the appropriate model to use for site-specific determinations of contingent management. The Agency could require petitioners to submit a site-specific groundwater fate and transport model with site-specific inputs. This approach would give more confidence that the model's predictions accurately predict the actual hydrogeology of the landfill site. The Agency also could use the EPACML model and require a certain number of site-specific inputs, e.g., soil conditions, depth of unsaturated zone. The Agency requests comments on this issue.

Commenters should keep in mind a principal concern regarding site-specific modeling. Assigning site-specific threshold levels could result in a significant resource burden to regulatory agencies and the regulated community. When a large number of petitioners seek thresholds tailored to their sites, regulatory authorities must analyze the modeling approach, the assumptions inherent in the modeling approach, and the input parameters to determine their validity.

Finally, the Agency requests comment on how should the Agency determine thresholds for landfills that meet two or more contingent management conditions—a landfill constructed with the subtitle D design criteria located in an arid area. One option is to add the generic factors to determine the threshold. The Agency also requests comments on how to assign thresholds for landfills with a combination of generic and site-specific factors.

In their March 18, 1992 letter to the Agency, the Department of Energy (DOE) said that "some hazardous and radioactive mixed wastes streams managed by the Department, energy industries, and other affected parties, contain minute concentrations of listed hazardous constituents, pose no appreciable risk to human health or the environment, but are nevertheless subject to costly regulation under subtitle C." DOE suggested to the Agency that hazardous wastes mixed with radioactive wastes may be more appropriately regulated under the existing requirements of the Atomic Energy Act (AEA). EPA expects that the general approach in today's proposed regulation would allow for exemption of mixed wastes that contain very low concentrations of chemically-hazardous constituents for RCRA subtitle C requirements. However, there is also a suggestion that for mixed wastes with higher concentrations of chemically-hazardous constituents regulated because of RCRA listings, regulation under the AEA already requires measures intended to control exposure to and releases of radioactive hazards that would also protect human health and the environment by limiting exposure to, and release of chemically-hazardous constituents from mixed wastes. EPA solicits comment as to whether it would be reasonable to develop a contingent management approach for mixed wastes where the conditional exemption criteria would be compliance with the regulations that exist to control the radioactivity hazards.

#### Phasing

Lastly, an issue that impacts both approaches proposed today is phasing. The CBEC approach will require phasing, because there are only 200 toxic constituents for which the Agency has health-based number and analytical methods. As a first phase, the Agency could promulgate CBEC levels for these 200 and the remaining appendix VIII constituents could be added as methods and health-based numbers are developed (see discussion of CBEC approach in part B of this section and discussion in section IV).

For the same reason, the ECHO approach will require phasing while methods and health-based numbers are developed for the remaining appendix VIII constituents as well. During the transition period, the mixture and derived-from rules would remain in effect for wastes containing toxicants which were not included as part of ECHO. Also, until constituent-specific DAFs could be developed for all toxic

constituents, a default DAF of 100 would be used until a DAF for each constituent could be developed (see discussion of the ECHO approach in part C of this section and discussion in section IV).

Also, phasing could also be directed towards certain wastes types or facilities for implementation and resource reasons (see phasing discussion in section IV). In summary, under the CBEC approach, the Agency proposes that all wastes, residuals, and media be eligible for the CBEC exemptions. However, the Agency is considering two possible phased options based on waste type: A limitation only to treatment residuals and a limitation only to media under a supervised remediation. In contrast, under the ECHO approach, the Agency would likely not phase in this approach by waste type, but by constituent; wastes containing hazardous constituents not included in the toxicity characteristics would remain subject to the mixture and derived-from rules. The Agency requests comment on the advantages and disadvantages of phasing and on alternative approaches to phasing.

Additionally, should comments support incorporation of contingent management in either the CBEC or the ECHO approach, the Agency may find it necessary, due to time constraints and implementation concerns to phase in portions of this approach. This could mean first promulgating the more conservative exemption criteria under CBEC or ECHO and later promulgating less conservative exemption criteria contingent upon specified management under either approach. In addition, in this rulemaking the Agency proposes to allow contingent management only in landfills.

#### *E Approaches for Contaminated Media*

In developing today's proposed rulemaking, EPA considered a number of issues regarding how the two conceptual approaches (CBEC and ECHO), which could be modified with contingent management, should be applied to contaminated media; that is, soils, groundwater, surface water and sediments that are contaminated with listed hazardous wastes. Substantial volumes of contaminated media are commonly generated and managed in the course of RCRA and CERCLA remedial actions. Thousands of other sites across the country may also potentially involve cleanup of media that may be subject to RCRA subtitle C requirements. It has been the Agency's experience with remedial programs to date that determinations of when such materials are subject to the RCRA

hazardous waste management standards can affect not only the costs of cleanup actions, but also the technical approach used, timing of the cleanup, and procedural requirements, such as the need to obtain a RCRA permit before conducting certain cleanup activities.

RCRA subtitle C regulations have to date generally not distinguished between wastes and contaminated media. Units in which contaminated soils and groundwater are treated, stored or disposed of must meet the same design and operating standards as those for "as generated" hazardous wastes. Other RCRA requirements, such as the land disposal restrictions, also apply to contaminated media, although some LDR treatment standards are being developed specifically for contaminated soils.

Today's proposal is expected to have an important and positive impact on the Agency's remedial programs. It should define much more clearly the jurisdiction of subtitle C in relation to contaminated media; in addition it should enhance the flexibility of remedial decisionmakers to apply management standards to materials that are contaminated but do not merit the full subtitle C level of protection.

Under the ECHO approach, one option for the Agency would be to consider contaminated media to be like other RCRA subtitle C wastes. Similar to their responsibilities for solid wastes, generators would have to test or rely on their knowledge of the media to determine whether it exhibits one of the characteristics. This approach for media would have the benefit of the simplicity of a characteristic-based system. For example, the tests for media would be the same as waste. However, the Agency has long recognized the special features of media which could warrant special regulation. These are described below.

EPA believes that there may be sound reasons for developing some explicit provisions under the subtitle C system for contaminated media. For one thing, the physical characteristics of contaminated media can be quite different from as generated wastes. Contaminated soils, for example, are highly variable in their composition and handling characteristics. Treatment of such soils can thus be particularly difficult. It should also be understood, however, that some contaminated media can be essentially identical to as generated wastes—contaminated groundwater, for example, may be very similar to dilute wastewaters generated from industrial processes.

Although some contaminated media might be distinguished from as generated wastes on the basis of their inherent physical/chemical properties, perhaps a more important distinction has to do with the type and amount of Agency oversight that is given to cleanup activities under RCRA and CERCLA, as opposed to ongoing generated waste streams. Remedial actions under these authorities are typically conducted with substantial Agency oversight; remedial decisions are made by the Agency based on a thorough study of the nature and extent of the contamination problems at the site. In contrast, most RCRA subtitle C regulations are uniform, national standards, and as such must require a level of protection sufficient for a highly diverse universe of facilities and environmental settings.

In addition, EPA has found that subtitle C requirements, when applied to contaminated media generated during cleanups (and indeed, more broadly, to remediation wastes), can act as a disincentive to more protective remedies, and can limit the flexibility of a regulatory decisionmaker in choosing the most practicable remedy at a specific site. In contrast, RCRA subtitle C regulations, when applied to newly generated wastes, ensure that the wastes are handled according to stringent national standards; due to the cost of subtitle C management, they also create a significant incentive for waste minimization and process changes to eliminate hazardous waste generation. Yet these same requirements, when applied to contaminated media, provide a comparable incentive for leaving wastes in place, or for selecting other remedies that minimize regulation under subtitle C.

EPA recognizes, of course, that both Superfund and RCRA provide it the authority to compel specific remedies, as long as the remedies are consistent with the goals of the statutes; under the current programs, the Agency can require facility owner/operators or responsible parties to excavate contaminated media (e.g., soils) and manage them fully in compliance with subtitle C. Similarly, in a fund-financed remedy under Superfund, EPA can use CERCLA funds to effect a similar remedy. Thus, through its regulatory authority, EPA can at least in theory override any regulatory disincentive against a given remedy. In its conduct of the Superfund and RCRA programs, however, EPA has come to recognize the fact that RCRA subtitle C requirements will apply to some remedies and not to others, and can influence the remedy

selection process in undesirable ways. For example, compliance with subtitle C disposal requirements may completely eliminate from consideration remedies that would otherwise meet Superfund or RCRA remedial standards and that might be the most sensible remedy from a technical point of view. In such cases, the regulatory decisionmaker might be faced with the dilemma of choosing between two or more extreme options, such as a remedy involving containment in place versus removal and management according to full RCRA subtitle C standards, without having the opportunity to consider a middle option that might be fully protective, in compliance with Superfund or RCRA cleanup goals, and acceptable to the local community. In such cases, practical considerations and the need for prompt action may often force the decisionmaker to select the less protective of the available extremes.

More broadly, under Superfund and RCRA corrective action, the regulatory decisionmaker must address a situation that is already unacceptable—that is, a situation which needs remediation. The decisionmaker's goal in such a case is to select a remedy that is fully protective, yet that reflects the technical and practical realities of the site. In addressing that situation, the decisionmaker needs the flexibility to consider a full range of strategies so that one may be selected that promptly, effectively, and permanently addresses the problem. EPA believes that constraining this range of strategies by requiring compliance with subtitle C disposal standards for wastes "generated" during remediation can often lead to remedies that are not cost-effective and that in some cases may actually be less protective solutions than the remedies that otherwise would be chosen.

The above considerations—the physical and chemical differences often found between contaminated media and as-generated wastes; the level of Agency oversight over remedial actions; and the counterproductive constraints that subtitle C requirements can impose on the remedy selection process—suggest that a somewhat different approach to regulating contaminated media (and perhaps remediation wastes) may be appropriate under RCRA subtitle C. In light of this, the Agency is proposing for comment in today's rule three alternatives for handling contaminated media that would allow EPA to consider certain site-specific conditions in making subtitle C exemption decisions in the context of remedial actions. The three alternative

regulatory approaches for media are discussed below.

#### Media Alternative 1: Contingent Management

This alternative would be essentially the same as contingent management for wastes, as described previously in this preamble. Thus, media contaminated with listed hazardous wastes would be exempted from subtitle C if the constituent concentration levels were at, or lower than, the levels specified for lower tier (e.g., more stringent tier) of CBEC or ECHO, or for the upper tier (e.g., less stringent tier) if the media were disposed contingent upon specified management. For CBEC, the upper tier would be contingent upon disposal in a landfill meeting the design criteria specified in 40 CFR 258 subpart D or State equivalent. For ECHO, the upper tier would be contingent upon the landfill meeting the criterion proposed in Option 8.

In the case of soils that meet the lower tier exemption levels, management and ultimate disposition of the soils could essentially be unrestricted. It is possible, therefore, that direct contact exposure (e.g., ingestion by children) to such soils could occur. However, the lower tier exemption levels are (except for metals) specified as leachate concentrations, and do not take into account direct contact exposure. It is therefore possible that contaminated soils that meet the lower tier (leachate) exemption levels could have total concentrations of constituents that might not be fully protective from the standpoint of direct contact exposure. The Agency requests comments as to whether for soils, the lower tier exemption levels should be specified as both leachate levels and levels based on direct human contact with the soils.

**Relationship with LDRs.** In a separate rulemaking, scheduled to be published in the *Federal Register* later this year, EPA intends to propose treatment standards for hazardous soils, for compliance with the RCRA land disposal restrictions (LDRs). In developing the HWIR and LDR proposals, the Agency has considered a number of issues relating to how the LDR treatment standards for soils will relate to the HWIR exemption levels for soils. Although further discussion of these issues will be included in the forthcoming LDR proposal, EPA believes that it is important in today's proposal to outline the relationship between the subtitle C exemption levels and LDR standards for soils.

The final HWIR rule will determine which soils contaminated with listed hazardous wastes will be subject to

subtitle C regulation, including the LDRs. The LDRs will specify the standards to which contaminated soils must be treated before they may be disposed. Although the regulatory effect of the two rules is different, the general objectives in establishing the specific levels for soils in both rules are in many ways consistent.

In the LDR rule, EPA expects to propose levels based on minimized risk for soils that are protective assuming direct contact (e.g., ingestion) and leaching of constituents to groundwater. These concentration levels thus represent the levels that the Agency believes pose minimal threats to human health and the environment. The "minimal threats" levels will be the "floor" standards for treatment; that is, treatment of soils will not be required below those levels. For some constituents, where the minimal threats levels cannot be achieved because of treatment technology limitations, a higher, technology-based level would be specified as the applicable treatment standard for that constituent. EPA is proposing that any of the options in this rule which are promulgated as final exemption criteria (not contingent upon management) would also represent a "minimized threat" level which also would become the BDAT floor. The Agency requests comment on this alternative for contaminated media. EPA also requests comment on the relationship between the contingent management approach and LDRs.

#### Media Alternative 2: Contingent Management with Provisions for Site Specific "Contained-In" Determinations

This alternative would adopt the lower and upper tier exemption levels, but would also provide a mechanism for determining alternative exclusion levels based on site-specific and waste-specific conditions. This alternative would thus codify the existing "contained in" rule for determining when contaminated media no longer "contain" listed hazardous wastes, and thus are no longer subject to RCRA subtitle C. Fundamentally, this alternative is based on the premise that it is important and necessary for the Agency to be able to consider, in certain situations, site-related conditions and waste-specific characteristics in establishing subtitle C exclusion levels.

The lower and upper tier exclusion levels as proposed today are intended to be generic, national standards that are protective of human health and the environment in all but highly unusual situations. They are thus based on a set of assumptions regarding potential exposure, fate and transport in the

environment, and human health effects. In developing such generic, protective levels, it is recognized that, given particular site conditions and waste characteristics, higher concentrations could be fully protective in some cases. For example, it may make sense to exclude soil from subtitle C regulations if the soil is contaminated only slightly above the lower tier levels, is in a remote location, or where groundwater is not of drinking water quality. For such situations, the current contained-in rule would allow the Agency to determine that the soil does not "contain" listed hazardous wastes. Alternative 2 would codify the contained-in rule and provide an administrative mechanism for determining when contaminated media will be exempted from subtitle C, based on site specific conditions. The Agency intends to propose specific regulations for codifying the contained-in rule, including procedures and decision factors for making such determinations, in the forthcoming LDR "Phase II" proposal for contaminated soils.

EPA proposes that contained-in determinations would be made based on the inherent characteristics of the contaminated media and the environmental conditions at the site. Contained-in determinations would therefore not take into account the lessening of exposure or risk potential that might occur if the contaminated media were managed in any particular way. For example, in the case of a site with contaminated soil, the decision as to what a protective contaminant concentration level might be based on or otherwise affected by the fact that the soils would be placed in a lined and capped landfill. The Agency intends that contained-in determinations would be based on conservative evaluations of risk to human health and the environment, assuming essentially unconstrained disposition of the contaminated media.

**Relationship to LDRs.** In terms of applicability of LDRs to contaminated media, a site-specific contained-in determination would have the same effect as a CBEC, ECHO, or lower tier exclusion. Media contaminated at levels below the contained-in concentrations as determined by the Agency for those media at that site would no longer be subject to Subtitle C of RCRA and would satisfy the LDRs, because they would meet minimum threat levels. Thus, LDR treatment of media would not be required below the site-specific contained-in levels. EPA solicits comments on this alternative for applying subtitle C exemption levels to contaminated media.



The Agency notes, however, that if it selected this alternative (or any of the other media alternatives), certain types of dilution to achieve the exemption levels would not be allowed. The legal authority to limit dilution comes from section 3004(a)(3) of HSWA as well as the goals and language for the LDR provisions (see 55 FR 22664).

#### Media Alternative 3: Contingent Management with Provisions for Site-Specific Contingent Management Determinations

The contingent management approach being proposed today for wastes would allow subtitle C exclusion determinations to at least partially account for how the wastes will be disposed. The disposition of wastes in a lined landfill would thus be considered as a factor as to the potential risks posed to human health and the environment by that waste (*i.e.*, its "hazardousness"). The third alternative being proposed today for applying exemption levels to contaminated media would extend this concept to allow such factors to be evaluated on a site-specific basis, in the context of RCRA or CERCLA remedial decisions.

This alternative would be similar to Alternative 2, in that it would provide the Agency with a mechanism to consider waste-specific and site-specific conditions in determining when contaminated media at a site should be subject to subtitle C regulation. While a contained-in determination would not be made contingent on any particular disposal method for the contaminated media, a site-specific contingent management determination would allow such waste management factors to be considered. In practice, EPA believes this approach could be beneficial in providing greater flexibility for remedial decision makers to apply management standards to contaminated media that would be proportionate to the actual risks posed by those media at a given site. If, as EPA believes, the concept of subtitle C exclusion levels based on contingent management is fundamentally sound, it may be reasonable to allow the Agency to apply the concept on a site-specific basis, where the Agency has sufficient knowledge of site conditions, and control over the management and disposition of contaminated materials. The legal basis for this alternative is similar to the legal basis for the contingent management approach for wastes: Because EPA would be able to ensure that remedial wastes managed under the Agency's oversight would not be "mismanaged", the waste would not be "hazardous" under RCRA section

1004 and "should" not be regulated as hazardous under RCRA section 3001(a).

To illustrate how this alternative might be applied, an example situation could be a site with two areas (A and B) of soil that is contaminated with the same listed wastes, at generally the same concentrations. An effective and protective remedial approach could be to install a cap over the contaminated soils. This would not trigger subtitle C requirements, since the hazardous soils would not be treated, stored, or disposed of. However, if the soils from Area A were to be excavated and consolidated into Area B, the soils from area A would be subject to subtitle C, in that placement of the hazardous soils into Area B would constitute disposal. Under the proposed Alternative 3, however, the Agency could determine that the soils in Area A, when disposed of in Area B, could be excluded from subtitle C due to the low potential risks that would be posed to human health and the environment by the soils, when they were disposed of in the capped unit.

An important feature of this alternative approach would be that the contaminated media would be subject to subtitle C standards prior to their disposal. Thus, if the contaminated soils in the above example were to be treated in a tank before being placed in the disposal unit, the tank would be subject to the applicable subpart J standards of part 264 or 265. Likewise, the Agency proposes that contaminated media that are disposed of off-site would not be eligible for site-specific contingent management determinations.

In making site-specific contingent management determinations, EPA would have to carefully consider considerable amounts of data pertaining to the contaminated media, site characteristics, and the nature and long-term effectiveness of the engineered containment systems (*i.e.*, caps, liners, etc.) of the disposal unit. Due to the amount of information and oversight that EPA believes would be needed in making site-specific contingent management determinations, it is proposed that such determinations would only be applicable in the context of corrective actions conducted pursuant to RCRA or CERCLA cleanup authorities. EPA believes that, given the implications of such determinations, and the need to ensure that contingent management determinations are based on sound technical judgment and a thorough knowledge of the site, only RCRA and CERCLA actions provide the requisite degree of Agency oversight to ensure the soundness of such decisions.

Similarly, EPA believes this approach should be limited to on-site disposal because of the focus of EPA's attention and authority on the remedial site. EPA also acknowledges that some States may have enforcement authorities or other legal mechanisms that provide a similar level of control and oversight as under RCRA or CERCLA. EPA solicits comment on whether site-specific contingent management determinations should be available for State-supervised cleanup actions under State authorities. EPA also solicits comment as to how such determinations might potentially be made available to cleanup actions that are not compelled under RCRA, CERCLA, or State authorities.

Although today's proposed Alternative 3 would apply only to contaminated media, EPA believes that conceptually, the same decision process could be applied to other types of hazardous wastes that are generated and managed pursuant to remedial actions. For example, sludges and other solid wastes are often managed as part of cleanup actions at RCRA and CERCLA facilities. The same logic could be applied to such wastes (*i.e.*, that would not be considered contaminated media), in making determinations as to how RCRA subtitle C should be applied. Although such wastes could be identical to as generated hazardous wastes, the degree of site-specific control that is inherent in Agency supervised remedial actions might be sufficient to allow contingent management determinations for all wastes, including contaminated media, that are managed pursuant to RCRA or CERCLA remedial actions. EPA specifically solicits comment on how and whether such determinations could be provided for remedial wastes other than contaminated media.

*Relationship to LDRs.* The discussion above addresses an approach under which contaminated media (and perhaps other remediation wastes) would be excluded from RCRA subtitle C jurisdiction at the time of on-site disposal in compliance with an Agency-selected remedy—assuming of course that the remedy fully met the protectiveness standards of Superfund or RCRA corrective action. It does not, however, address the question of whether the wastes would still have to meet the RCRA land disposal restrictions, even though they were no longer hazardous.

Generally, EPA has taken the position that the Agency has the authority to determine for each waste stream whether the RCRA land disposal restrictions take effect at the point a hazardous waste is generated. If this

approach were applied to contaminated media under Alternative 3, treatment to land ban standards would be required for wastes disposed of on-site in land disposal units, even if the overseeing regulatory agency determined that the waste was nonhazardous (under today's proposed exemption levels) at the time of disposal.

EPA has articulated in the "third third" LDR rule (see 55 FR 22520, 22651; June 1, 1990) its legal and policy reasons for its general approach of retaining discretion as to where to apply the LDRs. The Agency described these reasons in detail in the "third third" LDR rule (see 55 FR 22520, 22651, June 1, 1990). For some waste streams, the Agency believes the LDRs apply at the point of generation. At the same time, however, EPA has taken an alternative approach in the case of particular wastes and waste management situations, applying the land disposal prohibitions to those streams if they are hazardous at the point they are disposed of, but not applying the prohibitions at that point if the wastes are no longer hazardous (see 55 FR 22664). EPA has taken this alternative approach only where it was supported by other policy considerations—such as integrating the land disposal restrictions with regulatory programs under the Clean Water Act or the Safe Drinking Water Act. EPA also believes that this

approach may be justified for contaminated media excluded from subtitle C under today's proposal, if the third alternative discussed above is adopted. In such a case, applicability of the land ban at the point of generation would serve as a significant disincentive to many acceptable remedies and would constrain the range of protective remedies available to the regulatory decisionmaker. On the other hand, applying land ban at the point of disposal would allow a more effective balancing of possible remedies.

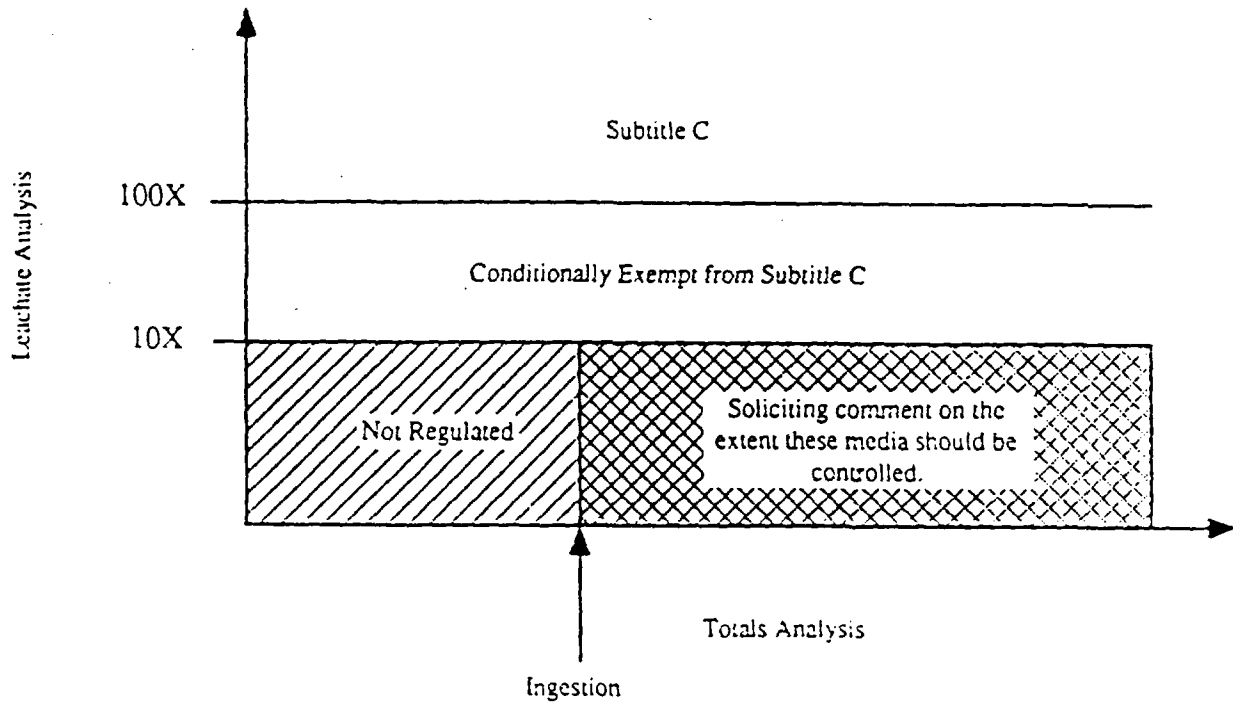
This point can be illustrated by the specific example discussed above, where two areas (A and B) of soil are assumed to be contaminated with hazardous waste at similar concentrations. In such a case, the decisionmaker would ideally want to look at a range of options, including capping in place; consolidating the soils in one of the two contaminated areas; building a new engineered landfill and disposing of the wastes in that landfill; excavating, partially treating the waste, and redispersing of it; and removing the waste, treating it to RCRA LDR standards, and redispersing of it. Yet, if RCRA LDR standards were to apply to the waste as a matter of law (or of ARARs) at the point of "generation" (*i.e.*, excavation), all but the first and the last options would probably be eliminated from consideration,

regardless of how protective, practicable, or desirable the other options were. In such a case—depending on the specifics of the situation—capping in place might have to be chosen as the only practicable or technically feasible remedy (*e.g.*, because of the volumes of media involved, materials handling problems, or local opposition to specific treatment options, such as thermal treatment). EPA believes this result would largely undermine the goals of Alternative 3, because it would significantly constrain the Superfund and RCRA remedy selection process, and in some cases lead to less protective remedies. For this reason, EPA believes that, if Alternative 3 is adopted, sufficient policy justification may exist to apply land disposal restrictions at the point of disposal in specific remediation settings.

EPA solicits comments on all aspects of this alternative for addressing contaminated media. In particular, the Agency solicits comment on the appropriateness of including within this alternative a new approach to the land disposal restrictions—that is, applying these restrictions to hazardous waste at the time of disposal—and on whether this alternative should be expanded to include remediation wastes other than contaminated media.

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Figure 2: Depiction of Contingent Management Options for Media



#### IV. Waste Applicability

In order to reduce the unnecessary regulatory burden of managing dilute wastes, treated wastes, and certain contaminated materials and media (including rags and clothing, soils and groundwater) as hazardous waste, the Agency is establishing exemption criteria for listed hazardous wastes and contaminated media which, if met, would exempt the waste/media from Subtitle C requirements. The Agency performed a number of analyses to assess the potential impact of this exemption mechanism. For these analyses, the Agency reviewed compositional data on approximately 800 wastes and media, including listed waste mixtures, listed treatment residuals, untreated listed wastes, and contaminated soils, groundwater, and certain treatment residuals. The compositional data were used to identify those wastes and media that would be expected to achieve the exemption. Based on these analyses, the Agency found that the wastes and media most likely to meet the criteria are contaminated soils and groundwater, dilute waste mixtures, and treatment residuals. Although, the Agency believes that most "as generated" listed hazardous wastes will not achieve the exemption levels, the Agency is not excluding these wastes from eligibility. Therefore, the Agency is proposing that the following waste categories be eligible for exemption demonstrations:

(1) Hazardous wastes listed in 261.31 and 261.32 (with the exception of certain wastes discussed below).

(2) Commercial chemical products listed in 261.33 that are present on the exemption list (*i.e.*, Appendices [x+1] and [x+2]).

(3) Contaminated materials and media (*i.e.*, groundwater, soils, rags, kiln refractory) that contain one or more hazardous wastes listed in (1) or (2) above.

(4) Wastes that are hazardous because they have been derived from or mixed with wastes in (1) or (2) above.

Eligible wastes and media must be analyzed for hazardous constituents contained in Appendices [x+1] and [x+2], respectively. The remainder of this section discusses alternate exemption mechanisms for certain wastes, as well as various proposed and optional eligibility restrictions for wastes and media (section IV.A) and waste management units (section IV.B).

#### A. Eligibility

##### Hazardous Wastes Listed Based Solely on Characteristics

The lists of hazardous wastes include a number of wastes that are listed solely because they exhibit a characteristic. 40 CFR 261.3(a)(2)(iii) states that such wastes remain hazardous until a mixture of these wastes with solid wastes no longer exhibits any characteristic of hazardous wastes identified in subpart C of 40 CFR part 261.<sup>4</sup> Thus, it is unnecessary to include these wastes, which are listed in Table 1, in the exemption program because of the existing self-implementing exemption process:

TABLE 1.—WASTES LISTED DUE TO CHARACTERISTICS FOR WHICH DE MINIMIS Exemptions Are Not Necessary

F003—The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol (I).
K044—Wastewater treatment sludges from the manufacture of explosives (R).
K045—Spent carbon from the treatment of wastewaters containing explosives (R).
K047—Pink/red water from TNT operations (R).
P009—Ammonium picrate (R).
P081—Nitroglycerine (R).
P112—Tetranitromethane (R).
U001—Acetaldehyde (I).
U002—Acetone (I).
U008—Acrylic acid (I).
U031—n-Butyl alcohol (I).
U055—Cumene (I).
U056—Cyclohexane (I).
U057—Cyclohexanone (I).
U092—Dimethyl amine (I).
U096— $\alpha,\alpha$ -Dimethylbenzylhydroperoxide (R).
U110—Dipropylamine (I).
U112—Ethyl acetate (I).
U113—Ethyl acrylate (I).
U117—Ethyl ether (I).
U124—Furan (I).
U125—2-Furancarboxaldehyde (I).
U154—Methanol (I).
U151—Methyl isobutyl ketone (I).
U186—1,3-Pentadiene (I).
U189—Phosphorous sulfide (R).
U213—Tetrahydrofuran (I).
U239—Xylene (I).

Note that a number of the commercial chemical products listed in Table 1 are also constituents on the exemption list (see Appendices [x+1] and [x+2]). The Agency plans to propose (in a separate notice) to modify the basis for listing these commercial chemical products, as well as F003, to include toxicity. Once the basis for listing these wastes is modified, these wastes would no longer be eligible for exemption under 261.3(a)(2)(iii) because they will no longer be listed solely for a characteristic, and instead would be

<sup>4</sup> Such mixing practices are generally considered to be treatment of hazardous wastes requiring RCRA permitting, unless otherwise exempted.

eligible for exemption under today's proposal. Under the ECHO approach, this situation could not occur because hazardous waste identification would be based solely upon 40 CFR 261.3(a)(2)(iii). The Agency requests comments on whether the wastes listed in Table 1 for which exemption levels exist should continue to be eligible for exemption under 261.3(a)(2)(iii) until such time as the basis for listing these wastes is modified.

##### Lack of Toxicity Data and Associated Health-Based Levels for Appendix VII Constituents

The Agency is proposing that certain listed wastes be ineligible for exemption under today's proposal because exemption levels cannot be derived at this time for all of the specific constituents for which the wastes were originally listed in 40 CFR 261.33 or appendix VII of 40 CFR part 261. (See section V, VI, and VII for discussions of selection of exemption constituents, development of health-based levels, and identification of methods and quantitation limits, respectively.) The Agency is proposing that the commercial chemical product wastes listed in Table 2 not be eligible for exemption under today's proposal. However, the Agency is interested in wastes, listed in Table 2, for which there are analytical methods, yet there are no health-based numbers. Specifically, the Agency requests comment on whether these wastes should be eligible for today's proposed exemption if after treatment the constituents are not detectable in the incineration residual.

TABLE 2.—40 CFR 261.33 COMMERCIAL CHEMICAL PRODUCTS THAT ARE NOT ELIGIBLE FOR CBEC EXEMPTION DUE TO LACK OF HEALTH-BASED LEVELS AND/OR ANALYTICAL METHODS

P001	Wartann, and salts. <sup>1</sup>
P002	1-Acetyl-2-thiourea. <sup>2</sup>
P005	Allyl alcohol. <sup>1</sup>
P006	Aluminum phosphide. <sup>1</sup>
P007	5-(Aminomethyl)-3-isoxazolol. <sup>1</sup>
P008	4-Aminopyridine. <sup>1</sup>
P014	Benzenethiol. <sup>1</sup>
P016	Dichloromethyl ether. <sup>1</sup>
P017	Bromoacetone. <sup>2</sup>
P018	Brucine. <sup>3</sup>
P023	Chloroacetaldehyde. <sup>3</sup>
P026	1-(o-Chlorophenyl) thiourea. <sup>2</sup>
P027	2-Chloropropionitrile. <sup>3</sup>
P034	2-Cyclohexyl-4,6-dinitrophenol. <sup>3</sup>
P040	O,C-Diethyl O-pyrazinyl phosphorothioate. <sup>2</sup>
P041	Diethyl-p-nitrophenyl phosphate. <sup>3</sup>
P042	Epinephrine. <sup>3</sup>
P043	Diisopropyl fluorophosphate. <sup>3</sup>
P045	Thiofanox. <sup>1</sup>
P046	$\alpha,\alpha$ -Dimethylphenethylamine. <sup>2</sup>
P047	4,6-Dinitro-o-cresol. <sup>2</sup>
P049	Dithiobiuret. <sup>2</sup>
P054	Ethyleneimine. <sup>3</sup>

TABLE 2.—40 CFR 261.33 COMMERCIAL CHEMICAL PRODUCTS THAT ARE NOT ELIGIBLE FOR CBEC EXEMPTION DUE TO LACK OF HEALTH-BASED LEVELS AND/OR ANALYTICAL METHODS—Continued

P056	Fluonne. <sup>3</sup>
P057	Fluoroacetamide. <sup>3</sup>
P058	Fluoroacetic acid, Na salt. <sup>3</sup>
P060	Isodrin. <sup>3</sup>
P062	Hexaethyl tetraphosphate. <sup>3</sup>
P064	Methyl isocyanate. <sup>3</sup>
P066	Methomyl. <sup>1</sup>
P067	Azidine, 2-methyl. <sup>3</sup>
P068	Methyl hydrazine. <sup>3</sup>
P069	2-Methylacetonitrile. <sup>3</sup>
P070	Aldicarb. <sup>1</sup>
P072	$\alpha$ -Naphthylthiourea. <sup>3</sup>
P075	Nicotine, & salts. <sup>3</sup>
P076	Nitric oxide. <sup>1</sup>
P077	p-Nitroaniline. <sup>3</sup>
P078	Nitrogen dioxide. <sup>1</sup>
P084	N-Nitrosomethylvinylamine. <sup>3</sup>
P087	Osmium tetroxide. <sup>1</sup>
P088	Endothal. <sup>1</sup>
P093	Phenylthiourea. <sup>3</sup>
P095	Phosgene. <sup>3</sup>
P096	Phosphine. <sup>1</sup>
P102	Propargyl alcohol. <sup>3</sup>
P105	Sodium azide. <sup>3</sup>
P107	Strontium sulfide. <sup>3</sup>
P111	Tetraethyl pyrophosphate. <sup>3</sup>
P116	Thiosemicarbazide. <sup>3</sup>
P118	Trichloromethanethiol. <sup>3</sup>
U005	2-Acetylaminofluorene. <sup>3</sup>
U006	Acetyl chloride. <sup>3</sup>
U010	Mitomycin C. <sup>3</sup>
U011	Amitrole. <sup>3</sup>
U014	Auramine. <sup>3</sup>
U015	Azaserine. <sup>3</sup>
U016	Benz[c]acridine. <sup>3</sup>
U017	Benzal chloride. <sup>3</sup>
U020	Benzenesulfonyl chloride. <sup>3</sup>
U024	Dichloromethoxyethane. <sup>3</sup>
U026	Chloromaphazin. <sup>3</sup>
U030	4-Bromophenyl phenyl ether. <sup>3</sup>
U033	Carbon oxyfluoride. <sup>3</sup>
U034	Chloral. <sup>1</sup>
U035	Chlorambucil. <sup>3</sup>
U039	p-Chloro-m-cresol. <sup>3</sup>
U042	2-Chloroethyl vinyl ether. <sup>3</sup>
U048	Chloromethyl methyl ether. <sup>3</sup>
U047	beta-Chloronaphthalene. <sup>1</sup>
U049	4-Chloro-o-toluidine, hydrochloride. <sup>3</sup>
U051	Creosote. <sup>3</sup>
U053	Crotonaldehyde. <sup>1</sup>
U058	Cyclophosphamide. <sup>3</sup>
U059	Daunomycin. <sup>3</sup>
U064	Dibenzo(a,i)pyrene. <sup>3</sup>
U071	m-Dichlorobenzene. <sup>3</sup>
U074	1,4-Dichloro-2-butene. <sup>3</sup>
U082	2,6-Dichlorophenol. <sup>3</sup>
U085	1,2,3,4-Diepoxybutane. <sup>3</sup>
U086	N,N'-Diethylhydrazine. <sup>3</sup>
U087	O,O-Diethyl S-methyl dithiophosphate. <sup>3</sup>
U090	Dihydrosafrole. <sup>3</sup>
U092	Dimethyl amine. <sup>3</sup>
U093	p-Dimethylaminoazobenzene. <sup>3</sup>
U097	Dimethylcarbamoyl chloride. <sup>3</sup>
U098	1,1-Dimethylhydrazine. <sup>3</sup>
U099	1,2-Dimethylhydrazine. <sup>1</sup>
U103	Dimethyl sulfate. <sup>3</sup>
U114	Ethylene bis(dithiocarbamic acid), salts and esters. <sup>3</sup>
U115	Ethylene oxide. <sup>1</sup>
U116	Ethylene thiourea. <sup>1</sup>
U126	Glycidylaldehyde. <sup>1</sup>
U133	Hydrazine. <sup>1</sup>
U134	Hydrofluoric acid. <sup>3</sup>
U138	Iodomethane. <sup>3</sup>
U139	Iron dextran. <sup>3</sup>

TABLE 2.—40 CFR 261.33 COMMERCIAL CHEMICAL PRODUCTS THAT ARE NOT ELIGIBLE FOR CBEC EXEMPTION DUE TO LACK OF HEALTH-BASED LEVELS AND/OR ANALYTICAL METHODS—Continued

U141	Isosafrole. <sup>3</sup>
U143	Lasiocarpine. <sup>3</sup>
U147	Maleic anhydride. <sup>1</sup>
U148	Maleic hydrazide. <sup>1</sup>
U149	Malononitrile. <sup>1</sup>
U150	Melphalan. <sup>3</sup>
U153	Methanethiol. <sup>3</sup>
U155	Methapyrene. <sup>3</sup>
U156	Methyl chlorocarbonate. <sup>1</sup>
U158	4,4'-Methylenebis(2-chloroaniline). <sup>1</sup>
U160	Methyl ethyl ketone peroxide. <sup>3</sup>
U163	Guanidine, N-methyl-N'-nitro-N-nitroso. <sup>3</sup>
U164	Methylthiouracil. <sup>3</sup>
U166	1,4-Naphthalenedione. <sup>3</sup>
U167	alpha-Naphthylamine. <sup>3</sup>
U170	p-Nitrophenol. <sup>3</sup>
U173	N-Nitrosodiethanolamine. <sup>1</sup>
U176	N-Nitroso-N-ethylurea. <sup>3</sup>
U177	N-Nitroso-N-methylurea. <sup>1</sup>
U178	N-Nitroso-N-methylurethane. <sup>3</sup>
U181	5-Nitro-o-toluidine. <sup>3</sup>
U182	Paraldehyde. <sup>3</sup>
U184	Pentachloroethane. <sup>3</sup>
U187	Phenacetin. <sup>3</sup>
U191	2-Picoline. <sup>3</sup>
U193	1,3-Propane sultone. <sup>3</sup>
U194	1-Propanamine. <sup>3</sup>
U197	p-Benzquinone. <sup>3</sup>
U200	Reserpine. <sup>1</sup>
U201	Resorcinol. <sup>3</sup>
U202	Saccharin, & salts. <sup>3</sup>
U206	Streptozotocin. <sup>3</sup>
U218	Thioacetamide. <sup>3</sup>
U219	Thiourea. <sup>3</sup>
U222	o-Toluidine hydrochloride. <sup>3</sup>
U223	Toluene diisocyanate. <sup>3</sup>
U236	Trypan blue. <sup>3</sup>
U237	Uracil mustard. <sup>3</sup>
U238	Urethane. <sup>3</sup>
U243	Hexachloropropene. <sup>3</sup>
U244	Thiram. <sup>1</sup>
U248	Warfarin, and salts. <sup>1</sup>

Superscript Key:

- <sup>1</sup>—No Analytical Method.
- <sup>2</sup>—No Health-based Number.
- <sup>3</sup>—Neither an Analytical Method or a Health-based Number.

There are 31 listed hazardous wastes that were listed for certain appendix VII constituents that do not appear on the CBEC exemption list. Table 3 identifies these 31 wastes. For a number of these wastes (F020, F021, F023, F027, F028, K036, K037, K038, K039), the appendix VII entries without exemption levels represent broad classes of toxicants. In some cases, the exemption list contains members of these classes (for example, F023 is listed for trichlorophenoxy esters, ethers, amines, and salts and the exemption list contains 2,4,5-T and Silvex, members of these classes). The Agency is proposing that none of these wastes be eligible for exemption under today's proposal because not all of their appendix VII constituents are included in the exemption list. The Agency is soliciting comments that would either reaffirm this approach or suggest an

alternative approach that would allow these wastes to remain eligible.

It is the Agency's goal for all listed wastes to be eligible for either CBEC or ECHO. The Agency will use Table 3 as a general guide to set priorities in this effort. For those constituents which have HBLs but lack verifiable test methods, EPA first will develop appropriate tests. After that effort, for those constituents which have SW-846 test methods but lack health-based levels, the Agency will develop health-based levels. Finally, the Agency will develop both test methods and health-based levels for those remaining constituents. The Agency asks for comments on this approach. The Agency also requests any comments, data, or proposed test methods for the constituents listed in Table 3.

### Phased Approach

The Agency is also soliciting comments on the implementation of today's proposed exemption in phases. Under a phased approach, the Agency would restrict exemption eligibility initially only to certain categories of wastes, providing the Agency with an implementation schedule that (1) allows the Regions and States to adopt the program more gradually, and (2) would provide sufficient flexibility to help ensure successful implementation. The universe of hazardous waste generators, treatment, storage and disposal facilities is approximately 100,000 facilities. The universe of treatment, storage and disposal facilities is comprised of about 5,000 facilities. The Agency is requesting comments on two options to limit exemption eligibility.

Under the first option, eligibility would initially be limited to treated wastes. The Agency believes that treated wastes are good candidates for the first phase of a phased approach because (1) they are the most likely wastes to have constituent concentrations that meet today's proposed exemption levels, (2) facilities generating treated wastes are generally very familiar with the hazardous waste handling requirements and thus may be able to develop complete demonstration packages more readily, and (3) the Agency is well acquainted with the operating practices at these facilities due to on-going permitting and inspection activities. Commenters supporting this option should address possible definitions of "treated waste".

The second phasing option would limit initial eligibility to facilities at which the Agency/States currently have oversight through the corrective action and permitting programs. Wastes

generated at these types of facilities would be good candidates for the initial phase of a phased approach for the same reasons listed above for treated wastes, but may represent a smaller universe of potential participants and facilities where the Agency is more familiar with actual waste or media characterization data. This option could also include wastes and media at CERCLA sites.

A gradual phase-in of the program balances the burden to the regulated community of having their low concentration wastes subject to Subtitle C control against the administrative burden to the Agency and authorized States of implementation and enforcement of the new exemption program. The budgetary commitments and manpower demands of implementing this exemption program for the entire regulated community would require direct tradeoffs from

other elements of the program. In addition, a shortage of properly trained technical enforcement personnel necessary to implement this new program immediately is an Agency concern. Because the exemption program proposed today would be generally self-implementing, the Agency recognizes that it will be necessary to place a high priority upon compliance monitoring and enforcement. By phasing in this program, the Agency would be able to develop inspection guidance based upon the initial implementation experience under either of the phasing options. A phased approach would provide additional time and experience to develop and present training for Regional EPA and State inspectors, improving their abilities to make sound technical reviews of exemption demonstrations.

The Agency is proposing several approaches for implementation in

Section XI of today's notice. One approach would require that facilities applying for exemptions must perform testing of the wastes, notify the appropriate agency and provide test results on request, and maintain records in order to qualify for the exemption. A phased approach would give the Agency experience in reviewing the sampling and analysis plans and testing records. During the initial implementation phase, the Agency would be able to evaluate the need for any special regulatory requirements to deal with unique problems associated with particular wastes. Using this experience, the Agency can decide whether revision of the exemption criteria is necessary. It will also provide the Agency the time to assess generally any environmental and administrative issues that arise during implementation of the exemption program.

TABLE 3.—INELIGIBLE LISTED HAZARDOUS WASTES WITH APPENDIX VII CONSTITUENTS LACKING CBEC EXEMPTION LEVELS

List Nos.	Appendix VII constituents without exemption levels	Appendix VII constituents with exemption levels
F020	tetrachlorophenoxy esters, ethers, amines, salts, acids (M).	tetrachlorodibenzo-p-dioxins and -furans, pentachlorodibenzo-p-dioxins and -furans, trichlorophenols, tetrachlorophenols.
F021	pentachlorophenoxy acids, esters, ethers, amines, salts (M).	pentachlorophenol, pentachlorodibenzo-p-dioxins and -furans, hexachlorodibenzo-p-dioxins and -furans.
F023	tri- and tetrachlorophenoxy esters, ethers, amines, salts (M).	tetrachlorodibenzo-p-dioxins and -furans, pentachlorodibenzo-p-dioxins and -furans, trichlorophenols, tetrachlorophenols, trichlorophenoxy acids.
F024	pentachloroethane (H), hexachlorocyclohexane (H), m-dichlorobenzene (H).	allyl chloride, chloromethane, 2-chloro-1,3-butadiene, dichloromethane, trichloromethane, carbon tetrachloride, 1,1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloroethene, 1,1-dichloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, hexachloroethane, dichloropropane, dichloropropene, hexachloro-1,3-butadiene, hexachlorocyclobutadiene, benzene, chlorobenzene, dichlorobenzenes, 1,2,4-trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, toluene, naphthalene.
F025	pentachloroethane (H) m-dichlorobenzene (H)	allyl chloride, chloromethane, 2-chloro-1,3-butadiene, dichloromethane, trichloromethane, carbon tetrachloride, 1,1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloroethene, 1,1-dichloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, hexachloroethane, dichloropropane, dichloropropene, hexachloro-1,3-butadiene, hexachlorocyclobutadiene, benzene, chlorobenzene, dichlorobenzenes, 1,2,4-trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, toluene, naphthalene.
F027, F028	tri-, tetra-, and pentachlorophenoxy acids, esters, ethers, amines, salts (M).	tetra-, penta-, and hexachlorodibenzo-p-dioxins and -furans, tri-, tetra- and pentachlorophenols, trichlorophenoxy acids.
K001	p-chloro-m-cresol (H) Acenaphthylene (H)	pentachlorophenol, phenol, 2-chlorophenol, 2,4-dimethylphenol, 2,4-dinitrophenol, trichlorophenols, tetrachlorophenols, creosote, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benz(a)anthracene, dibenz(a)anthracene.
K009	paraaldehyde (B), formaldehyde (Q)	formic acid, chloroform, methylene chloride, methyl chloride.
K010	paraaldehyde (B), chloroacetaldehyde (B), formaldehyde (B).	formic acid, chloroform, methylene chloride, methyl chloride.
K017	bis(chloromethyl) ether (B), dichloropropanols (M-B)	epichlorohydrin, 1,2,3-trichloropropane, bis(2-chloroethyl) ether.
K019, K020	vinylidene chloride (B)	ethylene dichloride, 1,1,1-tri-chloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride.
K023	maleic anhydride (Q)	phthalic anhydride.
K024	1,4-naphthoquinone (H)	phthalic anhydride.
K026	paraaldehyde (B), 2-picoline (H)	pyridine.
K027	toluene diisocyanate (H)	2,4-toluene diamine.
K036, K037	phosphorodithioic acid and acid esters (M)	toluene.
K039	phosphorodithioic acid and acid esters (M)	
K038, K040	phosphorodithioic acid, acid esters (M), formaldehyde (Q)	phorale.
K043	2,6-dichlorophenol (H)	2,4-dichlorophenol, 2,4,6-trichlorophenol.
K093, K099	maleic anhydride (Q)	phthalic anhydride.
K116	phosgene (B)	carbon tetrachloride, tetrachloroethylene, chloroform.
K123, K124, K125, K126	ethylene thiourea (B)	
K131	dimethyl sulfate (B)	methyl bromide.

(Q) Lacks SW-846 method.

(H) Lacks health-based levels.

(B) Lacks both SW-846 method and health-based levels.

(M) Indicates class or mixture.



Table 4 presents the wastes listed in § 261.33 which the Agency is proposing to be eligible for exemption because they are currently represented in larger analytical classes on the exemption list. For example, P010 wastes (arsenic acid) are represented by the element arsenic on the exemption list.

TABLE 4.—40 CFR 261.33 Commercial Chemical Products That Are Eligible for CBEC Exemption Because They Are Represented by Other Constituents on the Exemption List

P010	Arsenic acid (as As).
P011	Arsenic oxide (as As).
P012	Arsenic trioxide (as As).
P013	Barium cyanide (as Ba, CN).
P021	Calcium cyanide (as CN).
P029	Copper cyanide (as CN).
P031	Cyanogen (as CN).
P033	Cyanogen chloride (as CN).
P036	Dichlorophenylarsine (as As).
P038	Diethylarsine (as As).
P063	Hydrogen cyanide (as CN).
P065	Mercury fulminate (as Hg).
P073	Nickel carbonyl (as Ni).
P074	Nickel cyanide (as Ni, CN).
P092	Phenylmercury acetate (as Hg).
P098	Potassium cyanide (as CN).
P099	Potassium silver cyanide (as Ag, CN).
P101	Ethyl cyanide (as CN).
P103	Selenourea (as Se).
P104	Silver cyanide (as Ag, CN).
P106	Sodium cyanide (as CN).
P113	Thallium oxide (as Ti).
P114	Thallium selenite (as Ti, Se).
P115	Thallium sulfate (as Ti).
P119	Vanadic acid, ammonium salt (as V).
P120	Vanadium pentoxide (as V).
P121	Zinc cyanide (as CN, Zn).
U032	Calcium chromate (as Cr).
U136	Arsenic acid, dimethyl (as As).
U144	Lead acetate (as Pb).
U145	Lead phosphate (as Pb).
U146	Lead, bis(aceto-O) tetrahydroxy- (as Pb).
U196	Selenium dioxide (as Se).
U204	Selenious acid/Selenium dioxide (as Se).
U205	Selenium sulfide (as Se).
U214	Thallium acetate (as Ti).
U215	Thallium carbonate (as Ti).
U216	Thallium chloride (as Ti).
U217	Thallium nitrate (as Ti).
U246	Cyanogen bromide (as CN).

The Agency evaluated the constituents on Table 4 and notes that health-based levels exist for a number of these compounds. In most cases, these health-based levels are higher than the health-based levels for the corresponding parent metals. In two cases, however, the health-based level was significantly lower than the parent metal, i.e., for Hazardous Waste Numbers P110, tetraethyl lead and U249/P122, zinc phosphide. Due to the lack of SW-846 analytical methods for these types of compounds and the significant differences in health-based

levels for lead, tetraethyl lead, zinc, and zinc phosphide, the Agency is proposing that P110, U249, and P122 wastes be ineligible for exemption under today's proposal. Several other compounds on Table 4 have health-based levels that are approximately one order of magnitude, or less, lower than the health-based levels for the corresponding parent metals: P029—Copper cyanide; U204—Selenious acid; and P114—Thallium selenite (see the docket for this notice for further information). The Agency is proposing to allow exemption of these wastes due to the relatively small differences between the health-based levels of concern and request comment on this proposal.

#### Limitations of SW-846 Methods for Appendix VII Constituents

The Agency also requests comment on whether certain listed wastes should be ineligible for exemption under today's proposal because of limitations associated with the analytical quantitation for some of their appendix VII constituents. Table 5 lists those appendix VII constituents that cannot be quantitated readily at the health-based exemption level assuming a DAF of 1 (option 3). While the majority of these wastes are already proposed to be ineligible for exemption because health-based levels are not available for all of their appendix VII constituents (see Table 3), the Agency requests comments on whether they should also be ineligible because of expected analytic challenges in quantitating certain appendix VII constituents at their health-based exemption levels.

Specifically, the Agency is most concerned with the exemption eligibility basis for those wastes that have appendix VII constituents whose exemption levels are more than two orders of magnitude lower than their respective quantitation limits (Qls) (see Group I in Table 5). The Agency is less concerned with the Group II constituents because analysts can frequently lower detection limits by one order of magnitude by carefully fine-tuning the analytical equipment.

TABLE 5.—APPENDIX VII CONSTITUENTS WITH QUANTITATION LIMITS (QLS) THAT EXCEED THEIR HEALTH-BASED LEVELS (HBLs) BY MORE THAN ONE ORDER OF MAGNITUDE

	Appendix VII basis
Group I: QL > 100 × HBL	
Acrylamide.....	K014
2,4-Dinitrotoluene.....	K025, K111
2-Nitropropane.....	F005
2,4-Toluenediamine.....	K027*, K112, K113, K114, K115
Group II: 10 × HBL < QL < 100 × HBL	
Benzotrithione.....	K015
Bis(2-chloroethyl) ether.....	K017*
1,3-Dichloropropene.....	F024*
Epichlorohydrin.....	K017*
Hexachloro-1,3-butadiene.....	K016, K018, K030, F024*
Pentachlorophenol.....	F021*, F027*, F029*, K001
Phenylene diamine.....	K103, K104, K083
o-Toluidine.....	K112, K113, K114
p-Toluidine.....	K112, K113, K114

\* These wastes are proposed to be ineligible for exemption due to the lack of CBEC levels for some of the appendix VII constituents for which they were listed.

The Agency is requesting comments on whether it is necessary to list as ineligible those wastes with appendix VII constituents that cannot be routinely analyzed using SW-846 methods within two orders of magnitude of the exemption level. The Agency believes that most wastes that may contain these constituents of concern will also contain constituents with analytically achievable exemption levels which may act as adequate surrogates. In addition, generators of these wastes are experienced in their analyses and may be able to achieve the necessary quantitation limits readily, although not by SW-846 methods. The Agency also notes that as the state of the art in analytical techniques is advanced, the Agency expects to lower the Qls listed in Appendices [x+1] and [x+2] for these constituents.

#### Dioxin Wastes

The Agency also requests comments on whether the "dioxin listings" (that is, F020-23 and F026-28) should be eligible for exemption under today's proposal or whether instead they should only be exempted (when appropriate) through the delisting process. As discussed earlier, four of these wastes are currently proposed to be ineligible for exemption because not all of their

appendix VII constituents are included in the exemption list. Six of the seven dioxin listings are listed as acutely toxic and are currently subject to more stringent management controls under 40 CFR 264 and 265 than other types of listed hazardous wastes. In addition, as can be seen from Table 3, there are a number of appendix VII constituents for these wastes that are identified as broad chemical classes (e.g. pentachlorophenoxy acids, amines, esters, ethers, salts) and, as such, are not readily amenable to analysis or the development of health-based levels. Reviewing exemption demonstrations for these wastes through the delisting process may provide added controls which are appropriate for these wastes.

In addition, as described in section II.F.2, the Agency is requesting comments on whether there is a need for a redesignation mechanism for dioxin wastes (to reclassify wastes with low dioxin levels from acutely toxic to hazardous) through either the exemption process proposed today or the listing mechanisms.

#### Oil Content

The Agency is soliciting comments on whether additional restrictions for eligibility, such as criteria based on a percent oil content, are needed. Oily matrices present analytical difficulties which generally prevent analysts, using prescribed methods, from achieving necessary quantitation levels. In addition, the efficiency of the Agency's leaching procedures can be reduced for oily wastes. By specifying a maximum allowable percent oil content as an exemption eligibility criteria, facilities could use this level as a simple screening test to predict whether it is analytically feasible to attempt an exemption demonstration. The Agency envisions that a maximum allowable percent oil content would be on the order of 1.0 percent total oil and grease. (In the delisting program, this is the level at which the Oily Waste Extraction procedure is required because 1% oil and grease was estimated to be the amount which could coat a solid waste and temporarily inhibit leaching measurements in the EP test.) The Agency requests comments on whether this criteria should be included in the exemption criteria proposed today and on the appropriateness of the 1.0 percent level, as well as on similar wastes that should not be eligible for exemption under today's proposal and that can be screened using similar criteria. The Agency requests comment on the volume of wastes which may be excluded if oily wastes above 1% are deemed ineligible for these exemptions.

In addition, the Agency asks for comment on new leachate tests or modifications to the existing TCLP to simulate leaching from oily wastes.

#### Leachate From a Subtitle D Landfill Containing Newly Listed Wastes

Several parties have raised to EPA the case of leachate from a subtitle D landfill which receives solid wastes that subsequently become listed hazardous wastes. Under the current regulations, the leachate would become listed hazardous waste due to the derived-from rule. The options presented in today's notice may address this situation by setting concentration-based exemption levels for toxic constituents that may be in the leachate. However, in their comments to the Agency, Browning-Ferris Industries (BFI) expressed concern regarding the uncertainty of industrial wastes which the Agency may list in the future and the retroactivity of the derived-from rule on leachate generated from previously unlisted wastes and on gas condensate (see BFI comments, March 18, 1992). BFI believed that retroactivity "penalizes" facilities which manage leachate from previously unlisted wastes and may be a disincentive for environmentally responsible activities such as thorough recordkeeping, active leachate management, and installation of a gas recovery system.

EPA asks for additional information regarding what actual operational problems arise in the management of this leachate. The Agency would like information as to whether the generic concentrations proposed in this regulation would exempt low risk leachate and gas condensate in such situations. Also, the Agency is aware that at some landfills, leachate from sumps which are part of the leachate collection system may be collected by trucks and transported to on-site waste water treatment systems. EPA asks for comment on the appropriateness of extending the RCRA waste water treatment in tanks exemption to cover this situation, even though the sumps are not "hard-piped" to the on-site waste water treatment system.

#### Accidental Spills

There are a number of situations resulting from the mixture rule which causes frustration to the regulated community. One is spills of listed hazardous waste. When an accidental spill occurs of listed hazardous materials, there is a danger that everything the material contacts automatically becomes a hazardous waste, too. For example, a spill of a listed material into a wastewater

treatment system can cause all sludges in that system to become subject to hazardous waste management requirements. The unintentional spill causes waste code carry-through problems. EPA requests comment on whether these types of spills are adequately addressed under the *de minimis* spill exemption at 40 CFR 261.3(a)(2)(iv)(D) or if other solutions are necessary and what these solutions are.

EPA recognizes that these are mostly accidental spills and requests comments from the public on what approaches could be used for dealing with such events. Are the options described in today's Notice suitable for dealing with spills? Another concern that has been raised is whether or not the testing requirements of this proposal are suitable for these situations. The Agency seeks comments on reasons why they may or may not be suitable.

#### Very Small Volume Wastes

Similarly, frustration in the regulated community is caused by the mixture rule as it pertaining to very small volume wastes such as boiler blowdown. Blowdown volumes may be very small in relation to the volume of process wastewaters (i.e., boiler blowdown of 100 gallons mixed with one million gallons of process wastewater) yet because the two wastestreams are mixed, the mixture becomes a hazardous waste. Where a very small wastestream carrying a hazardous waste code mixes with a very large wastestream without such a code, it is unlikely that the resulting wastestream or its sludges will be hazardous because of the listed wastes; however, the mixture might be above CBEC levels because of constituents in the unlisted wastewaters. Further, EPA notes that periodic testing requirements may not be well-suited to the situation of an incidental spill causing a temporary spike in values. The Agency solicits comment on whether or not today's Notice contains possible solutions to this situation or whether some special solution to it is available.

#### Industrial Wipes

The Agency requests comment on industrial wipes which have been contaminated with a listed solvent or listed solvent mixture. Under the current regulatory framework, these contaminated wipes may be regulated as the listed hazardous wastes. Under several of the options proposed today, these generators would still need to test the wipes or use knowledge to determine if these contaminated wipes were exempted. Data, which appears in

the record for today's proposal (see comments by Sidley and Austin, P.C. on behalf of Kimberly-Clark Corporation, April 2, 1992), indicate that levels of toxic organic constituents in wipes contaminated with some of the solvents regulated by the F001-F005 listings appear to be extremely low. The Agency requests comment on whether these wipes should continue to be regulated by the mixture rule as listed hazardous wastes.

Specifically, EPA requests comment on an alternative approach for addressing wipes contaminated with a solvent regulated in the F001-F005 listings, which is a specific rule that states if these materials are not visibly contaminated, then the F001-F005 listings would apply as characteristics rather than as listings. Very simple criteria which are easily implemented at the point of use, such as spent wipes which do not drip solvent even when wrung out, could be the basis for determining "visibly contaminated". Under this approach a generator may use knowledge, such as the sort suggested in the Kimberly-Clark comments, to determine whether wipes that are not "visibly contaminated", at the point of use, would contain leachable quantities of the solvents that are regulated under by the F001-F005 listing at levels greater than exemption criteria. EPA believes that this approach might be a practical solution to an issue that has been problematic for years. The simple field test to limit this modification of the listings, and the operation of the listings as a narrowly focused characteristic, would act as a safeguard which protects the environment while recognizing that wipes are widely used and recognizing evidence that concentrations of hazardous constituents in the wipes can be quite low.

#### B. Waste Management Units

The Agency is proposing that CBEC or ECHO wastes are exempt from the time of a proper notification and that notifications are not retroactive (see Section XI of this preamble). Units that have been managing hazardous wastes, including CBEC or ECHO wastes, will not automatically become exempt. Instead, such a unit will be expected to go through closure procedures to show that no environmental damage was done by past management of wastes. In many cases, hazardous waste management units may have been used to manage hazardous wastes other than the exempted wastes and EPA is concerned that a self-implementing rule is not the right procedure to evaluate historical waste management practices.

The Agency has evaluated a number of delisting petitions where the waste met the delisting criteria, but the facility was subject to corrective action due to contamination and/or existing groundwater contamination exceeding the health-based levels used in delisting evaluations. In these cases, the contamination was greater than would be expected based on an evaluation of the waste alone, indicating that perhaps the more hazardous constituents had preferentially migrated into underlying aquifers, or that the petitioned waste had been treated in the unit to reduce hazardous constituent concentrations, or that historical waste management practices had impaired the quality of the underlying aquifer.

The Agency believes that these units should continue to be subject to applicable subtitle C requirements including closure standards (see further discussion under section XIII E). The Agency believes that the evaluation of the impact of a unit on the environment, particularly the impact of land disposal units on groundwater and the determination of whether the unit ever managed non-CBEC hazardous wastes, is more complicated than can be accounted for in this type of self-implementing program. The Agency is particularly concerned that units containing wastes that meet today's exemption criteria and have groundwater contamination should not be exempted from subtitle C control. The Agency requests comment on this approach and alternative approaches to regulating units which have managed exempt wastes.

#### C. Existing Regulatory Exemptions From the Mixture and Derived-From Rules

EPA notes that there are currently numerous exemptions from the hazardous waste identification system, particularly the mixture and derived-from rules, for certain types of wastes or wastes with certain constituent concentrations. See e.g. 40 CFR 261.3(a)(2)(iv) (A) through (E). In light of today's proposal, EPA asks for comments on whether these exemptions continue to be warranted. EPA requests comment on whether these exemptions should be retained and the rationale for retaining them.

#### V. Selection of Constituents of Concern

The Agency is proposing exemption levels for 200 hazardous constituents. To develop this list of constituents, EPA first compiled a master list that included all hazardous constituents identified in 40 CFR part 261, appendices VII and VIII, and/or part 264, appendix IX. EPA then developed exemption

concentrations for all of the compounds on the master list for which SW-846 analytical methods and health-based levels are available. The resulting list is being proposed as the "exemption constituent list" (see appendices [x+1] and [x+2] of the proposed rule).

The background on the selection of compounds for the exemption list is presented below and further discussed in supporting documentation for this proposal included in the public docket.

This extensive exemption list was developed because the Agency believes that it is necessary to require facilities to analyze their wastes for a broad range of constituents in a self-implemented exemption demonstration. First, it is not feasible in a self-implemented program to predict consistently which specific hazardous constituents will be present in a given waste because process-specific characteristics, feedstock contaminants, waste mixing practices, and degradation will cause the constituent profiles to vary. Secondly, by establishing a set list of exemption constituents, the Agency will ensure that all exempted wastes have been evaluated on a consistent basis. Third, this approach is in keeping with section 3001(f) of HSWA which directs the Agency to examine other factors (including other constituents) in addition to those factors for which a waste was originally listed as hazardous when evaluating delisting petitions. Finally, a set list of constituents will minimize the potential for disputes over which constituents of concern need to be identified in particular wastes. As will be discussed further in section XII.B, the Agency is soliciting comments on alternatives to reduce the list of constituents for which testing is required after the initial demonstration (i.e., in subsequent recertification demonstrations).

#### A. Universe of Hazardous Constituents

The master list of potential exemption constituents was compiled from the primary lists of constituents used by EPA to regulate hazardous and solid waste activities under RCRA. These lists included: (1) The list of hazardous constituents found in 40 CFR part 261, appendix VIII (hereafter referred to as appendix VIII), (2) the list of hazardous constituents found in 40 CFR part 261, appendix VII (hereafter referred to as appendix VII), and (3) the list of constituents for which ground-water monitoring data are required at hazardous waste land disposal units found in 40 CFR part 264, appendix IX (hereafter referred to as appendix IX). The Agency believes that these sources

encompass most of the known hazardous constituents of concern. The Agency, however, requests comments on whether additional constituents should be added to this list. (The master list and the Agency's determination of which constituents should be used in the exemption criteria are available for review in the public docket to this rule.)

#### *B. Development of the Exemption Constituent List*

The Agency carefully evaluated the master list to determine which constituents should be included in the exemption constituent list. This Section describes the steps that were taken in the development of the exemption constituent list.

#### *Identification and Deletion of Classes and Mixtures*

As a first step, chemical classes and mixtures were deleted from the master list because it is not generally possible to develop analytical quantitation limits or health-based levels for these groups of constituents. Instead, the Agency verified that specific compounds from each of these classes and mixtures were present on the master list. Examples of these groups include chloroethers, chlorofluorocarbons, and phenolic compounds. The full list of 33 chemical classes and mixtures that were deleted from the master list and the constituents on the exemption list which were used as representatives of these groups are available in the docket.

#### *Deletion of Analytically Redundant Constituents*

The Agency also eliminated constituents from the master list that are identified analytically as metallic or inorganic species. For example, several inorganic salts of chromium are listed in Appendices VII, VIII, and IX. Generators of wastes containing these salts analyze/determine the elemental chromium content rather than the metallic species for the purposes of compliance with the Toxicity Characteristic. This approach will continue to be used in this proposal. The metallic compounds deleted from the master list are identified in the background document.

#### *Availability of Health-Based Levels*

As will be discussed further in Section VII, the Agency evaluated the existing toxicity information for the candidate master list constituents to determine whether sufficient data exist to establish a health-based level. Those constituents for which sufficient data did not exist were not included on the exemption list. The Agency then prioritized (based on prevalence in wastes and media) for further study those constituents for

which health-based levels could not be derived. The prevalence analysis is available in the background document for today's notice. At such time as health-based levels can be derived, the Agency may propose to add these constituents to the exemption list (as well as to Appendix VIII where appropriate):

Acenaphthylene +	Malononitrile*
Anthracene +	2-Methylacetonitrile +
Bis(2-chloroethoxy)-	+Nitrophenol*
methane* +	Propargyl alcohol
Brucine	*Sodium fluoracetate
2-Chloronaphthalene	Thiophenol
Crotonaldehyde	1,2,3-Trichlorobenzene +
1,3-Dichloropropanol*	Trichloromethanethiol*
2,3-Dichloropropanol	m-Xylene +
2-Fluoroacetamide*	p-Xylene +

+ Indicates that constituent is not currently listed on Appendix VII.

\*These compounds were tested by manufacturers. The results were submitted to EPA and are currently being evaluated (TSCA Section IV Test Rule for OSW Chemicals, June 15, 1988, 53 FR 22301).

The Agency also solicits toxicity data from the public to support the levels proposed today, as well as additional data for constituents that are not currently on the exemption list. Data on environmental and health effects of a constituent should, when possible, follow the toxicity testing guidelines of 40 CFR 797 and 798. (See 50 FR 39252, September 27, 1985, Toxic Substances Control Act Test Guidelines.)

#### *Availability of Analytical Methods*

The Agency then reviewed the availability of analytical methods for the quantitation of candidate constituents in solids and aqueous media. The Agency has deleted all constituents from the exemption list which do not yet have SW-846 analytical methods. As methods are developed, the Agency may propose to add these compounds to the exemption list. The Agency requests comments on this approach or others (such as mass balance demonstrations) to address compounds lacking analytical methods.

#### *Consideration of Chemically Unstable Constituents*

The Agency considered removing chemically unstable constituents from the master list on the basis that, due to chemical degradation or transformation, such constituents actually may not be found in wastes and the environment. Several problems, however, were created by this approach. Chemical instability, such as hydrolysis, dissociation, reactivity, etc., is highly variable under various environmental conditions. In addition, the degradation or transformation products of certain hazardous constituents may be more or less toxic than the original compounds. Due to this variability and the difficulties associated with predicting the degree of degradation or the rates of

competing transformation mechanisms which may occur in the environment, the Agency is proposing an approach which assumes that any degradation or transformation that may occur will have already occurred by the time that the waste or medium is characterized. Thus, the exemption criteria includes a number of constituents which are known to be unstable under certain conditions (acrolein, benzotrichloride, epichlorohydrin, methyl methacrylate, phthalic anhydride, tribromomethane), as well as many known toxic degradation and transformation products. The Agency believes that this is a reasonable approach which, while it may underestimate hazard for those few constituents that can transform into more toxic products, is conservative for most constituents. The Agency specifically requests comment on this approach.

The Agency does not believe that this will be overly burdensome to generators who choose to make an exemption demonstration because the analytical methods listed in appendices [x+1] and [x+2] for the analysis of these constituents are already necessary to analyze for other exemption constituents.

#### *Modifications to 40 CFR 261, Appendix VIII*

As a result of the development of the exemption list, the Agency has identified a number of constituents which should be added to appendix VIII of part 261. This appendix is the list of hazardous constituents which serve as the basis for hazardous waste listing determinations. Section XII provides additional details regarding the constituents proposed for addition to this appendix.

#### *C. Evaluation of Constituents Omitted From Exemption List*

While the Agency is proposing a subset of the master list of hazardous constituents as the exemption list, this does not mean that any omitted constituents are not hazardous. Omitted constituents may not be toxic but may be hazardous due to ignitability, reactivity, or corrosivity, and accordingly will be regulated when present in a waste at levels which trigger the respective hazardous waste characteristics. Other omitted constituents may be toxic, but currently available data does not allow for the establishment of health-based levels. Similarly, other constituents may be hazardous but current analytical state-of-the-art techniques do not allow for their detection in potentially exempted waste or media. As new health effects data and analytical techniques are

developed, the Agency may propose to add these constituents to the exemption list.

The Agency is most concerned with the appendix VII constituents that are not included on the exemption list. Some of these constituents were omitted for lack of health-based data or appropriate analytical methods. (See section IV.A.) These constituents are among the Agency's first priorities for the development of health-based numbers and are listed below:

**Appendix VII Constituents With No SW-846 Analytical Methods**

Bis(2-chloromethyl)ether  
Formaldehyde (in soils)  
Maleic anhydride

**Appendix VII Constituents With No HBNs**

Acenaphthylene  
p-Chloro-m-cresol  
1,3-Dichlorobenzene  
2,6-Dichlorophenol  
Hexachlorocyclohexane  
1,4-Naphthoquinone  
Pentachloroethane  
2-Picoline  
Toluene diisocyanate  
Vinylidene Chloride

**Appendix VII Constituents With No HBN or SW-846 Analytical Methods**

Chloroacetaldehyde  
Paraldehyde  
Phosgene

**VI. Health-Based Levels**

For each constituent on the master list, the Agency evaluated the existing toxicity information to determine whether there were sufficient data to establish a health-based level. For these toxicants, the data were evaluated either by the Agency's CRAVE (Carcinogen Risk Assessment Verification Endeavor) Workgroup, Carcinogen Assessment Group (CAG), Reference Dose (RfD) Workgroup, or Environmental Criteria Assessment Office (ECAO—Cincinnati). This approach is consistent with the approach used in the Agency's other risk-based RCRA programs such as the Toxicity Characteristic, delisting petition evaluations, closure, and corrective action, as well as the CERCLA program. The background documents for this proposal are available in the public docket and provide details on the basis for the health-based levels for each constituent.

**A. Health Effects**

The Agency evaluated two main types of health effects when establishing the exemption levels: systemic toxicity and carcinogenicity. The Agency's approach to assessing the risks associated with these two pathways differ because different mechanisms of action are

thought to be involved in the two cases. In the case of carcinogens, the Agency assumes that a small number of molecular events can evoke changes in a single cell that can lead to uncontrolled cellular proliferation. This mechanism for carcinogenesis is referred to as "non-threshold", because there is essentially no level of exposure for such a chemical that does not pose a small, but finite, possibility of generating a carcinogenic response. In the case of systemic toxicity, compensating and adaptive (including organic homeostatic) cellular mechanisms exist that must be overcome before the toxic endpoint is reached. For example, there could be a large number of cells performing the same or similar function whose population must be significantly depleted before the effect is seen. The "threshold hypothesis" is based on the theory that a range of exposures from zero to some finite value can be tolerated by the organism with essentially no chance of expression of the toxic effect.

For both carcinogens and non-carcinogens, the Agency is proposing to use any available Maximum Contaminant Levels (MCLs) proposed or promulgated under the Safe Drinking Water Act (SDWA) of 1974, as amended in 1986, as the health-based levels for exposure to liquids or leachates. In general, MCLs for non-carcinogens are derived from the Reference Doses (RfDs), while MCLs for most carcinogens are set as close to zero as technically feasible; this normally corresponds to risk levels that range from  $10^{-4}$  to  $10^{-6}$ . (Note that, although the derivation of MCLs considers factors in addition to health effects, it also considers other routes of exposure. The Agency's policy has been to use MCLs, when available, in other similar concentration-based programs, including delisting, clean closure, and corrective action.) For those constituents which do not yet have MCLs or proposed MCLs, the Agency is proposing to use oral reference doses (RfDs) for non-carcinogens and oral Risk Specific Doses (RSDs) for carcinogens as described further below. However, if new MCLs are proposed or finalized under the SDWA prior to the promulgation of today's rule, the Agency proposes to substitute the new MCLs for the RfDs, RSDs, and proposed MCLs presented in today's notice. The Agency requests comments on this proposed approach to incorporating proposed and finalized MCLs in the final exemption rule.

**1. Non-Carcinogens**

The Agency proposes to use oral RfDs as the basis for: (1) The leachate exemption levels for those non-carcinogenic constituents that do not have proposed or promulgated MCLs, and (2) the contaminated soil exemption levels for all non-carcinogens (MCLs do not apply to soils). An RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to a substance for the human population (including sensitive subgroups) which appears to be without an appreciable risk of deleterious effects during a lifetime. For brief periods and for small excursions above the RfD, adverse effects are unlikely to occur in most of the population. However, as the frequency of exposures exceeding the RfD increases, and as the magnitude and duration of exposure above the RfD increases, the probability that adverse effects may be observed also increases.

The method for estimating the RfD for non-carcinogenic end-points was described in the proposed rule for the Toxicity Characteristic (see 51 FR 21648, June 13, 1986). In summary, the approach used to derive an RfD is to identify the highest test dose of a constituent associated with no effects or effects that are not considered adverse in an appropriate animal bioassay test. These experimental no-observed-adverse-effect-levels (NOAELs) or no-observed-effect-levels (NOELs) are considered to be an estimate of the animal population's physiological threshold for adverse effects. The RfD is derived by dividing the NOAEL or other toxicity benchmark by suitable scaling or uncertainty and modifying factors. In the event that an appropriate NOAEL or NOEL is not available, the lowest-observed-adverse-effect level (LOAEL) may be used with additional scaling factors.

It is important to note that information on exposure levels in the environment (e.g., background levels) are not considered in the development of an RfD. Rather, the oral RfD reflects the total theoretical permissible daily human exposure from all ingestion sources, including water and food. RfDs have been calculated for many, but not all, of the non-carcinogenic constituents for which the Agency is establishing exemption levels.

The Agency prefers to use only RfDs that have been evaluated and verified by the RfD Workgroup as the basis for setting regulatory levels. However, for some compounds, the Agency has not yet completed its verification process; thus, RfDs under development are being



used for the purpose of this proposal for those compounds. If the final verified RfDs differ from the RfDs under development proposed in today's notice, the Agency will adopt the new (*i.e.* verified) values for the final rule after noticing the data in the *Federal Register*.

## 2. Carcinogens

The Agency proposes to use the oral Risk Specific Doses (RSDs) as the bases for: (1) Leachate exemption levels for carcinogenic constituents for which MCLs have not been promulgated or proposed, and (2) soil exemption levels for carcinogenic constituents (MCLs do not apply to soils/solids). The method for estimating the RSD for carcinogenic end-points was described in the proposed rule for the Toxicity Characteristic (see 51 FR 21648, June 13, 1986).

In summary, the RSD is an upper-bound estimate of the average daily dose of a carcinogenic constituent which corresponds to a specified excess cancer risk for lifetime exposure. The upper limit of the dose can be calculated from the slope of a "dose-response" curve. The dose-response curve is determined by a model that extrapolates from human epidemiological and/or animal bioassay data to a dose range where there are no experimental data. The upper limit of the dose calculated from the slope gives rise to a given risk level. The RSD corresponds to this limit when a level of risk is specified.

EPA's Carcinogen Assessment Group (GAG) and CRAVE Workgroup have estimated the carcinogenic potency (*i.e.*, the slope of the "dose-response" curve) for humans exposed to low dose levels of carcinogens in the environment. These slope factors indicate the upper-bound confidence limit estimate of excess cancer risk for individuals experiencing a given exposure over a 70-year lifetime. In practice, a given dose multiplied by the slope factor gives an upper estimate of the lifetime risk to an individual of developing cancer. By specifying a level of lifetime risk (no matter how small), one can also estimate the corresponding dose using the slope factor.

To arrive at an RSD for a carcinogen, a risk level must be specified. EPA proposes to specify the risk level of concern on a weight-of-evidence basis, as described below. EPA promulgated Guidelines for Carcinogen Risk Assessment on September 24, 1986 (51 FR 33992), which defined a scheme to characterize substances based on experimental data and the kinds of responses induced by a suspect carcinogen. These guidelines specify the following five classifications:

- Group A—Human carcinogen (sufficient evidence from epidemiologic studies)
- Group B—Probable human carcinogen
- Group B<sub>1</sub>—Limited evidence of carcinogenicity in humans
- Group B<sub>2</sub>—A combination of sufficient evidence in animals and inadequate or no evidence in humans
- Group C—Possible human carcinogen (limited evidence of carcinogenicity in the absence of human data)
- Group D—Not classifiable as to human carcinogenicity (inadequate human and animal evidence of carcinogenicity or no data available)
- Group E—Evidence of non-carcinogenicity for humans (no evidence of carcinogenicity in at least two adequate animal tests in different species or in both adequate epidemiologic and animal studies).

The CRAVE Workgroup regards agents classified in Group A or B as suitable for quantitative risk assessment. The suitability of Group C agents for quantitative risk assessment requires a case-by-case review because some Group C agents do not have a data base of sufficient quality and quantity to perform a quantitative carcinogenicity risk assessment. The weight-of-evidence basis was used to eliminate Group D and E constituents from further consideration as carcinogens.

Under each of the regulatory options presented in today's proposal, the Agency is using the same risk level for Group A, B, and C carcinogens. This approach is consistent with the way carcinogens are treated in the Toxicity Characteristic rule and the delisting program. For those options where the Agency is planning to use a low multiplier of the health-based number (*i.e.*, 1 or 10), a risk level of  $10^{-6}$  was selected on the basis for the exemption criteria. Under these options, the exemption criteria levels may be protective from any likely exposures. The use of the  $10^{-6}$  risk level is consistent with other RCRA programs where the goal is to be fully protective (*i.e.*, clean closure).

For options where a multiplier of 100 is used, the Agency's intent is to make the exemption criteria consistent with the Toxicity Characteristic regulatory levels. (It is important to note that, even though the approach may be consistent with the TC, some of the specific exemption criteria will be different from the TC regulatory levels because the Agency has revised several health-based numbers since the TC was promulgated.) Therefore, the Agency proposes to use a risk level of  $10^{-5}$  to establish exemption criteria under those options. While the Agency recognizes that there may be some potential risk if wastes exempted under these options are mismanaged, the CBEC contingent

management option may minimize the likelihood of complete mismanagement due to minimum design requirements.

## B. Exemption Scenarios

In developing the different proposed regulatory options, the Agency has derived exemption criteria based on two scenarios which could potentially lead to high exposures. The first exposure scenario assumed by the Agency is one of groundwater contamination, where waste is placed in unlined landfill and the leachate from the waste then contaminates the groundwater and reaches nearby drinking water wells. To assess the exposure potential from the leachate scenario, the Agency applies the Toxicity Characteristic Leaching Procedure (TCLP) to the waste and measures the concentration of hazardous constituents in the test leachate.

However, there are certain types of wastes (*i.e.*, contaminated soils) which may not always be disposed of in landfills. Under many circumstances, these soils could either be left in place or treated and then put back where they were removed. Therefore, the Agency developed an additional set of exemption criteria for soils based on an exposure scenario whereby there is direct contact with the soil in a potential future residential setting. To assess the exposure potential from this scenario, the Agency measures the total concentration of hazardous constituents directly in the soil.

## C. Exposure Assumptions

The Agency has evaluated three sets of exposure assumptions for the contaminated groundwater scenario and one set of exposure assumptions for the in-place waste scenario.

### 1. Contaminated Groundwater Scenario

In deriving criteria for hazardous constituents in waste leachates, the Agency needs to consider (1) the expected chemical fate of each individual hazardous constituent in the landfill and the subsurface environment; (2) the amount of dilution and attenuation that reduces the concentration of the constituents in the leachate or the groundwater as they migrate to a drinking water well; (3) if the groundwater is contaminated, the amount that is consumed; and (4) the health effect of that consumption.

To simulate the potential leaching of a waste in a landfill, the Agency uses the Toxicity Characteristic Leaching Procedure (TCLP) test described in detail in the Toxicity Characteristic rule. As an alternative for wastes which will



never be disposed with municipal wastes, the Agency is soliciting comment on the Synthetic Precipitation Leaching Procedure, which is discussed in greater detail in section IX.

Once the toxicants leave the landfill in the leachate, they will flow through unsaturated zone of the soil to the saturated zone. To simulate this process as well as the contaminant movement in the saturated zone, the Agency used the EPACML groundwater fate and transport model which was developed and employed in the Toxicity Characteristic regulation. This model has the capability to model some subsurface chemical processes like hydrolysis, biodegradation, and metal speciation.

In the TC rulemaking, however, the Agency found that it did not have enough data to incorporate these factors into the rulemaking, although hydrolysis rates were evaluated and compounds which hydrolyzed rapidly were not included in the rule. At that time, the Agency pledged to reconsider these chemical processes once more data became available.

In hydrolysis, certain classes of organic constituents transform into other constituents in the presence of water. In developing the TC rule, the Agency found that the DAF of 100 was not appropriate for some constituents because they hydrolyzed rapidly and the Agency had little information on the products formed during the hydrolysis process. Through its own research and from published data, the Agency has identified hydrolysis rates for some of the constituents listed in Appendix [x+1] of today's rule. These rates are found in the docket to today's rule. Should the Agency choose to develop constituent specific DAFs, the Agency proposes that it would use these reported values in combination with appropriate data on hydrolysis products in the EPACML model to determine these DAFs. The Agency requests comment on the accuracy of this data and its appropriateness for regulatory purposes.

For those Appendix VIII constituents for which the Agency does not have hydrolysis data, the Agency would welcome any data known to commenters. Under the Toxic Substance Control Act, the Agency has published a protocol for determining hydrolysis rates (see 40 CFR 796.3500; 53 FR 23081). Commenters are urged to provide hydrolysis data consistent with the procedures outlined in this protocol. If the Agency finds that this data meets the standards of this protocol, EPA would propose, after notice and opportunity for comment, to use this

data in combination with appropriate data on hydrolysis products for developing constituent-specific DAFs.

As indicated above, the Agency is concerned about transformation products of hydrolysis. After a hazardous constituent is hydrolyzed, the resulting transformation chemical may be just as hazardous as the original contaminant. Before applying a hydrolysis rate to determine the appropriate DAF for a constituent, the Agency requires data on the hydrolysis products, including their toxicity hydrolysis rates. Therefore, the Agency is requesting such information along with recommendations on how to utilize the information in developing DAFs. EPA has developed an approach to modeling hydrolysis reactions and products, which is described in the docket for today's rulemaking.

In biodegradation, microbes digest certain organic chemicals as a source of nutrients. Biodegradation of organic wastes in the soil is the principal physical mechanism for septic tanks and other common waste disposal methods. Recent research has demonstrated that many hazardous organic chemicals can naturally biodegrade in the soil under certain conditions. The Agency has in today's docket some research articles which summarize observed biodegradation rates in field and laboratory work.

The EPACML model includes an input parameter for a chemical-specific first-order biodegradation rate. Therefore, the Agency believes that biodegradation should be included in an assessment of potential exposure to groundwater contamination if appropriate information on biodegradation products (i.e., their toxicity and fate and transport properties) is available.

However, the Agency has previously been concerned that biodegradation rates vary from site to site and that laboratory results sometimes have not been verified by actual observed biodegradation rates in the field. Subsurface conditions are often anaerobic, and laboratory test are generally done under aerobic conditions. In fact, the absence of verified results prevented the Agency from including assumptions of biodegradation in the final TC rule. In an effort to obtain accurate, verifiable biodegradation rates under a variety of conditions, the Agency published a protocol under TSCA (53 FR 22320; 40 CFR 795.54) to obtain anaerobic biodegradation rates suitable for regulatory purposes. It is the Agency intent, after public notice and opportunity for comment, to evaluate and use any data submitted by petitioners which EPA finds to conform

to this protocol, along with appropriate data on biodegradation products, as part of the EPACML simulation to determine constituent specific DAFs.

The Agency recognizes that the maximum length of time required to carry out this protocol—64 weeks—is longer than the promulgation date for the final rule, April 28, 1993. However, EPA will continue to accept biodegradation data as it becomes available and promptly place such data in the public record. As scientific understanding of biodegradation and other soil chemical reactions grows, the Agency will reevaluate its risk assessment (including the DAFs) as appropriate.

Another important chemical reaction in soil is the adsorption of constituents by soil particles. Both metals and organic constituents can adsorb and de-adsorb on to the negative ions which dominate the surfaces of most soil particles. If the constituents stay bonded to the soil and do not de-adsorb, they can not migrate (or migrate very slowly) to the groundwater and to a potential point of exposure. As discussed below, the critical issue in utilizing adsorption factors is defining the total extent of potential contaminant release.

Organic adsorption is primarily influenced by six factors: molecular size, hydrophobicity, molecular charge, organic molecular fragments that undergo hydrogen bonding, the three dimensional arrangement of the organic fragments, and molecular fragments of the chemical which undergo coordination bonding. These six factors are discussed in today's docket. The principal measure of organic adsorption is a relationship between the first-order adsorption factor and the octanol/water partition coefficient. EPA has determined these partition coefficients for many of the appendix VIII constituents. These coefficients are discussed in today's docket. The EPACML model has an input parameter for this coefficient and the Agency will evaluate and use these values, if appropriate, to predict constituent-specific DAFs.

Inorganic constituents can undergo a complex series of speciation reactions (including complexation, precipitation, and adsorption) between metallic ions in the leachate and the soil particles. At the time of the TC rule, the Agency determined that it did not have the analytic data and methods to estimate cation exchange. In response to comments, the Agency announced that it was in the process of creating a model, MINTEQA2, to model more accurately geochemical speciation. The Agency has

recently completed a version of MINTEQA2, which is discussed in today's docket for comment. As the Agency develops constituent-specific DAFs, the Agency will use this model to develop adsorption rates for all appropriate appendix VIII constituents. The Agency requests comments on appropriate input model parameters.

The Agency requests comments on other chemical reactions which commenters believe may be important for cling potential contaminant fate in the subsurface environment.

For contaminant transport, past regulatory applications of the EPACML model have developed dilution/attenuation factors only under steady-state conditions. In the analyses for the TC rule, as described in the preamble and background documents (55 FR 11798, March 29, 1990) the Agency found that the assumption of steady state conditions was not appropriate in developing DAFs for some of the proposed constituents. In this proposal, the Agency is now considering DAFs for over 200 constituents and is investigating explicitly contaminant flow assuming transient flow. The EPACML model can determine DAFs assuming non steady-state flow and the Agency proposes to use this model for this purpose once the issues concerning the extent of contaminant release have been resolved.

In order to assume non steady-state flow, the length of the contaminant pulse must be determined. In a landfill, contaminants will leach from the waste as the precipitation percolates through the layers of waste. In hazardous waste which is solid, relatively mobile contaminants near the surface of the waste will leach first. Contaminants deep in the interior of waste or tightly bonded chemically to the solid will take much longer to leach out, if ever. Thus, the expected contaminant concentration of the leachate over time will resemble a "pulse"—a build-up of concentration in short-run followed by a rapid decay to a lower, almost steady-state concentration. Therefore, to model a non steady-state simulation, the Agency needs to make appropriate estimates of the source of contamination. In a preliminary background analysis for the TC rule, the Agency assumed that the full volume of the landfill was filled with solid waste and the contaminant of concern at a concentration of 1000 ppm. The Agency used this approach as a screening check of its results and is concerned that this scenario may not be representative of actual disposal conditions. The Agency calls for comments on the appropriate simulation

parameters which will provide adequate protection of human health and the environment.

Related to this issue, the Agency also calls for comment on whether the length of time necessary for a contaminant to reach a receptor well should be of regulatory concern. For example, if the Agency determines that under non-steady-state conditions a certain constituent will likely only migrate to the receptor well 100 or 1000 years in the future, how should the Agency factor that result in its calculation of an exemption multiple for that constituent? The Agency requests comment on this issue. Specifically, what, if any, limits should be placed on time periods of regulatory concern for groundwater exposure.

The EPACML model also incorporated specific dispersivity constants derived from the literature. In the TC rule, the Agency received many comments on this issue. Since there may be better scientific understanding and additional field observations of this phenomena may have emerged in the time after the development of that rule, the Agency again requests comments on EPACML's dispersivity assumptions. Specifically, the Agency requests comment on its assumption of no horizontal dispersivity in the unsaturated zone. Although the Agency believes that incorporating horizontal dispersivity will have little effect on overall DAFs, the Agency asks for additional information on this issue.

Also, for each simulation, the EPACML chooses randomly from a distribution of unsaturated zone depths as it performs a nationwide simulation for the calculation of DAFs. For these simulations, EPA used a regression relation to determine dispersivity values as a function of the unsaturated zone depth. However, to avoid excessively high values of dispersivity for deep unsaturated zones, a maximum dispersivity of 1.0 m was used for depths greater than 44.5 m. The Agency requests any data or comment related to this issue.

Additional EPACML model limitations in modeling contaminant transport in the unsaturated and saturated zones include the fact that the model does not simulate the movement of nonaqueous materials and the assumption that the subsurface media are homogeneous and isotropic and without significant fracturing. The Agency recognizes that these assumptions may underestimate and overestimate risk for various actual conditions. In response to comments to the TC rule, the Agency found that these assumptions were necessary for model development and were appropriate for

regulatory use. The Agency has not changed its position on this issue and proposes to use the existing modeling assumptions in the EPACML model. However, the Agency once again asks for comment on these issues and asks that commenters provide specific suggestions, recognizing the need for computational efficiency, on how the model may be improved to incorporate anisotropy, heterogenous conditions, and fractured flow.

A further concern with the EPACML model is that it simulates the migration of contaminants from landfills whereas many wastes are managed in surface impoundments, which can have higher leaching rates due to hydraulic pressure. The Agency has developed a model to simulate leaching from surface impoundments and has included it in the docket for today's rule. The Agency solicits comment on the use of this model in setting exemption criteria.

Using the EPACML model and other information, including data from EPA's 1986 Solid Waste Landfill Survey, the Agency potential exposure and risk to populations drinking water from wells near unlined landfills receiving exempted waste. This analysis is included in the docket for today's rule. In assessing risks, the Agency first used the EPACML model to estimate the potential number of people whose drinking water wells would contain contamination at levels above the health based numbers. This estimate was done for two cases: (1) assuming the exemption criteria were set at 100 times the health based numbers and (2) assuming the exemption criteria were set at 10 times the health based numbers. Once the Agency had estimated the potential number of people exposed, it then evaluated the potential risks associated with those exposures.

If the exemption criteria are set at 100 times the health based numbers, the Agency estimates that 10 to 15 percent of the population using private wells within one mile downgradient from Subtitle D landfills receiving exempted wastes could be exposed to contamination above the health based number if the wastes were all contaminated to the extent allowable (i.e., if all exempted wastes leached at 100 times the health-based level). Approximately 1 to 2 percent of the population described above could be exposed to contamination at more than 10 times the health based numbers.

If unlined Subtitle D landfills with the same distribution of proximity to drinking water wells received these exempted wastes today, approximately

10,000–15,000 people would be exposed to levels above health based numbers, and 1,000–2,000 people would be exposed to levels more than 10 times the health based numbers. Since not all landfills would receive exempted wastes, proportionally fewer people would actually be potentially exposed. More importantly, little of the exempted wastes would leach at levels of 100 times the health-based numbers, so exposures would be even lower.

However, to conduct this assessment, the Agency had to make some assumptions which it recognizes could overstate the estimate of the exposed population. For example, EPA assumed that all landfills in the 1986 Survey were unlined. However, in its Regulatory Impact Analysis for the 1991 final Subtitle D rule, the Agency found that 18 states (containing over half of all landfills in the 1986 Survey) required some form of engineered containment system—e.g., synthetic liners, leachate collection systems. Thus, this assessment would overestimate the amount of leachate that could migrate out of the distribution of landfills. In addition, since 1988 the Agency has promulgated subtitle D criteria which would make the exposure scenario and distribution in the assessment unlikely once these requirements are fully implemented. In addition, this assessment assumes that the population distribution around industrial and demolition Subtitle D landfills is comparable to the distribution around municipal Subtitle D facilities. It is possible that fewer people reside near industrial or demolition facilities as municipal landfills, since they are often located in or near residential areas.

To evaluate potential risks to the exposed population, the Agency considered different assumptions concerning period of residency near a landfill and amount of water consumed. In developing the health based numbers (MCLs, RSDs, and RfDs), the Agency uses the conservative consumption factors of 2 liters/day of water from the same source for a lifetime of 70 years. More average exposure assumptions are a consumption rate of 1.4 liters/day and a residency period of nine years.

The effect of applying more average exposure assumptions differs depending on whether or not the constituent of concern is a carcinogenic. For carcinogens, the risk to the individual is reduced in proportion to the decreases in consumption rate and residency time, or by about one order of magnitude. Thus if average exposure factors are used, and the exemption criteria are set at 100 times the RSD based on a risk of

$10^{-5}$ , then the estimated individual risks for the 10–20 percent of the population exposed at levels above the health based numbers would be  $10^{-6}$  or greater, rather than  $10^{-5}$  or greater.

However, over a 70 year period there would be more people residing at the contaminated site (assuming the residence is continually occupied) so that more people would be exposed, although at lower individual risks. Therefore, the overall population risk (i.e., number of expected cancer cases in the population) would decrease only by 30%, the amount of the reduction in the consumption rate.

For noncarcinogens, the risk may or may not be reduced depending on whether the adverse effect will occur over an exposure period of less than a lifetime and the extent to which the 30% decrease in the water consumption rate would in some cases reduce exposure to levels below the RfD. For many of these toxicants, exposure to levels above the RfD for a period of nine years would be of significant concern, particularly if the effects are ones such as reproductive toxicity or developmental toxicity.

Finally, it is important to keep in mind that the MCLs are not based solely on risk factors; other factors such as readily achievable analytical detection limits and economic feasibility of treatment are also considered. Thus for a number of constituents with MCLs, exposure at the MCL exceeds exposure levels which would be calculated based strictly on RfDs and RSDs.

If the exemption criteria are set at 10 times the health based numbers, the Agency estimates that 1 to 2 percent of the population using private wells within one mile downgradient from landfills receiving exempted wastes could be exposed to contamination above the health based numbers. For all Subtitle D landfills, this population is estimated to be 1,000–2,000, although again not all of these landfills would be receiving exempted wastes.

The Agency also evaluated the scenario where the exemption criteria were set equal to the health based numbers. This scenario assures that nobody would be exposed to drinking water concentrations above these levels of concern, since no dilution/attenuation is assumed. To evaluate whether this assumptions was completely unrealistic, the Agency collected data from a number of contaminated sites which indicate that, at least in a few worst-case situations, the groundwater concentrations of contaminants hundreds of feet from the source had decreased very little from the concentrations at the source. One

interpretation of these data (which are presented in the docket for today's rulemaking) is that very low DAFs may occur. The Agency requests comment on these observations and whether the likely conclusion from these results is that very little dilution and attenuation has occurred.

## 2. Scenarios for Wastes Not Placed in Controlled Units

In developing the additional exemption criteria for soils and wastes not subject to landfill controls, on which EPA is seeking comment, the Agency evaluated a scenario in which there would at some time be residents at the site who would be exposed directly to the waste contaminants. The primary exposure would be through incidental ingestion (particularly by children). Children are particularly at risk from soil ingestion because of their higher soil ingestion rates and much lower body weights. For this analysis, a soil ingestion rate of 0.2 grams/day and a body weight of 16 Kg were used for children. The Agency also assumed that 100 percent of the ingested contaminant was absorbed. Adult exposure through residential soil ingestion was assumed to be low relative to childhood exposure, although the Agency solicits comments on whether and how adult residential exposure should be included.

In assessing the risks from this scenario, the Agency used different approaches for assessing risks from carcinogens and systemic toxicants. For carcinogens, the childhood exposure was averaged out over the 70 years lifetime to determine the risk of developing cancer over a lifetime. However, for non-carcinogens the childhood exposure was not averaged out over a lifetime in order to ensure that the child would not be exposed to levels well above the RfD threshold levels for a five year childhood exposure period.

Additional details on all of the specific parameters and equations used in these evaluations are provided by the background document in the docket for today's rule.

In today's notice, the Agency is proposing and asking for comment on exemption levels for hazardous constituents in soils and surface wastes on the basis of direct ingestion by children.

The Agency recognizes that there are additional exposure routes which are potentially of concern and solicits comments on whether and how other exposures could be evaluated to establish exemption criteria. The other potential human exposure routes of

concern include dermal absorption, inhalation of particulates and volatile compounds, runoff to surface waters, adult soil ingestion, and uptake of contaminants by food crops and grazing animals used for food and daily products. In addition, the Agency solicits comments on whether additivity or contaminant contributions from other sources should be considered. These issues are also discussed in section IX, "Additional Exemption Criteria Under Consideration."

One reason for concern over other exposure routes is that, despite the conservative nature of the direct exposure assumptions, there are a number of constituents that do not appear to pose a significant threat via ingestion. As illustrated in the background document supporting the derivation of the exemption levels, these exposure pathways can predict "acceptable" soil levels that are quite high. To ensure that the exemption levels would be protective of other exposure routes, the Agency has proposed, and seeks comment on, capping the surface waste exemption levels at 1,000 ppm. This cap is an alternative to levels which would otherwise be very high. The soil cap has been proposed for the following constituents:

Acenaphthene	Ethyl ether
Acetone	Ethyl methacrylate
Acetophenone	Fluoranthene
Acrolein	Fluorene
Barium	Formic acid
Benzyl alcohol	Isobutyl alcohol
Butanol	Methanol
Butyl benzyl phthalate	Methyl ethyl ketone
Carbon disulfide	Methyl isobutyl ketone
Chlorobenzene	Methyl methacrylate
Chlorobenzilate	Naphthalene
2-Chloro-1,3-butadiene	Nickel
Cresols	Phenol
Cumene	Phthalic anhydride
Cyanide	Pronamide
1,2-Dichlorobenzene	Pyrene
Dichlorodifluoromethane	Styrene
1,1-Dichloroethane	2,3,4,6-Tetrachlorophenol
trans-1,2-Dichloroethene	Toluene
Di-n-butyl phthalate	2,6-Toluenediamine
Diethyl phthalate	1,1,1-Trichloroethane
Dimethyl phthalate	Trichlorofluoromethane
2,4-Dimethyl phenol	2,4,5-Trichlorophenol
Di-n-octyl phthalate	1,1,2-Trichloro-1,2,2-trifluoroethane
Diphenylamine	
2-Ethoxyethanol	Xylene
Ethyl acetate	Zinc
Ethylbenzene	

Therefore, although the Agency believes that not very many soils with high concentrations of any constituent would pass both the surface waste and leachate exemption levels, EPA is proposing to cap the soil levels to ensure that these wastes are not excluded inappropriately where hazards from the constituent may result from factors not reflected in the exposure scenarios. As previously discussed, there may be

additional potential exposure pathways of concern for humans. In addition, there may be sensitive environmental endpoints that would be adversely impacted by exposure to these constituents at 1,000 ppm or higher. This issue is discussed in greater detail in Section IX, "Additional Exemption Criteria Under Consideration."

The Agency is also proposing that the Regional Administrator and/or authorized State authority retain an override authority to deny exemptions to facilities where such potential threats may exist. The Agency requests comments on this approach and, specifically, data demonstrating whether soils containing these types of constituents are likely to pass both the soil and leachate criteria.

It is important to note that 1000 ppm cap may be necessary for this rule because the rule is a generic, self-implementing set of standards, with no inherent mechanism for dealing with different potential exposure routes. This situation is in contrast to situations where site-specific and chemical-specific cleanups are being done under RCRA Corrective Action and CERCLA authority. In these cases, other exposure routes are considered where appropriate, and there is no need to apply a generic cap in establishing action levels or cleanup standards. Therefore, EPA proposes that the regulatory authority may modify the "cap" on a site-specific basis.

High temperature metals recovery (HTMR) residues are used as road base materials or as anti-skid materials. The Agency excluded from subtitle C HTMR residues provided that these slag residues meet designated concentration levels, are disposed in subtitle D units, and exhibit no characteristics of hazardous wastes (see 56 FR 41164); however, the Agency did not make a final decision as to whether residues used as road base or anti-skid materials should be excluded. The Agency decided that its regulatory tools for evaluating road base materials (*i.e.*, methods to evaluate exposure) were too uncertain to make a final decision. Comments submitted to the Agency maintain that the use of the EPACML model, which estimates potential risk to groundwater, is overly conservative for materials that are applied to the land as road base (*i.e.*, they are not co-disposed with municipal solid wastes in an unlined landfill, and are generally covered with concrete or asphalt that should reduce infiltration) and that application to the land as road base is actually more environmentally protective and beneficial manner than

disposal in a subtitle D landfill (see comments submitted by Beveridge and Diamond, P.C. on behalf of the American Iron and Steel Institute, April 6, 1992). The Agency requests comment on the appropriateness of the EPACML model in evaluating risks from HTMR materials used as road base, the appropriateness of the Synthetic Precipitant Leaching Procedure (method 1312), and suggestions on whether (and how) to evaluate pathways other than ground water contamination.

## VII. Analysis and Limits of Detection

To qualify for an exemption as proposed today, a facility bears the full burden of demonstrating that: (1) All analytical data used for the exemption demonstration are of known precision and accuracy, and (2) all analytical data are generated using analysis techniques that are sufficiently sensitive to prove that the concentrations of the constituents of concern are not present at the selected regulatory levels. These proposed requirements mandate the use of standardized analytical methods (or their equivalents), comprehensive quality control procedures, and, for those constituents of concern whose health-based exemption levels are significantly lower than readily achievable analytical quantitation limits, the achievement of specified quantitation limits.

### A. Standardized Analytical Methods

#### 1. SW-846 Methods and Quality Assurance

EPA is identifying specific analytical methods that are applicable for each of the exemption constituents, taken from "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods", U.S. EPA, Office of Solid Waste and Emergency Response, Publication SW-846 (third edition), November 1988 (SW-846) and subsequent updates. This compendium of analytical and test methods contains the Agency's standardized RCRA analytical methods. The recommended methods are listed in Appendices [x+1] and [x+2].

SW-846 methods are written to allow the analyst latitude within the analysis scheme to address diverse matrices. The Agency recognizes that achievement of the prescribed quantitation limits may require some modifications to the identified analytical method, such as additional sample cleanup steps or use of alternate gas chromatographic column or detector systems, for the analyses of certain waste matrices. EPA proposes that such modifications be within the framework of the applicable

SW-846 method, as specified in Chapter Two of the manual and that they be documented.

The proposed SW-846 analytical methods contain general performance data (i.e., precision, accuracy, and sensitivity) to determine how they can be expected to perform in a variety of matrices. Chapter 1 of SW-846 contains QA/QC recommendations which apply to all sampling and analysis procedures. The Agency believes that analyses performed in support of exemption demonstrations should have an appropriate level of the quality control like those methods recommended in SW-846 unless alternative equivalent methods are used (see discussion on Alternative Methods). While the Agency is not proposing that the quality control procedures in Chapter One be specifically required, it does solicit comment on such an approach.

## 2. Alternative Methods

The Agency recognizes that analytical methods have been developed which are similar in scope to many of the SW-846 analysis methods (e.g., EPA's Methods for Organic Analysis of Municipal and Industrial Wastewater). Therefore, EPA is proposing that facilities may use other methods as long as the facility demonstrates that the methodology used was sensitive enough to have detected the analytes of concern at the levels specified in the regulation.

### B. Need for Quantitation Limits

The Agency is proposing quantitation limits that represent the lowest levels that can be reliably measured within acceptable limits of precision and accuracy during routine laboratory operating conditions using the specified methods. These levels are referred to as "exemption quantitation criteria" or EQCs and are presented in Appendices [x+1] and [x+2]. The Agency believes that it is necessary to specify EQCs because a number of the constituents on the exemption list have health-based exemption levels which are not analytically quantifiable in all matrices. By establishing EQCs as benchmarks or maximum allowable quantitation limits (that is, facilities must achieve actual quantitation limits that are no higher than the specified EQCs), the Agency is ensuring that all exemption demonstrations will achieve equivalent degrees of quantitation and that wastes with high levels of contamination that tend to confound analytical protocols are not exempted.

A comparison of the risk-based exemption levels with the concentrations measurable using currently available methods reveals a

number of cases where quantitative measurement of analyte concentration at the risk-based level cannot be achieved reliably, using standardized analytical methods, particularly for the option based on a DAF = 1. EPA is proposing that for all constituents whose exemption quantitation limits exceed their health-based exemption levels, facilities must achieve the specified quantitation limits.

For example, the health-based exemption level (DAF = 1) for aldrin in leachate and wastewaters is 0.002 ug/l. The specified EQC for aldrin in leachate and wastewaters is 0.04 ug/l. Exemption demonstrations must show that aldrin cannot be quantitated in the wastewater or leachate above 0.002 ug/l, with a quantitation limit at least as low as 0.04 ug/l. The Agency will assume that the exemption level for aldrin has been met if the method has been demonstrated to achieve the EQC of 0.04 ug/l and no aldrin is found in the material. However, if aldrin is quantitated at a level above 0.002 ug/l, the exemption criterion has not been met, even if the quantitated level is below 0.04 ug/l.

The Agency recognizes that by relying on EQCs for constituents with health-based exemption levels that are significantly lower than analytically quantifiable levels, wastes and media that contain toxic constituents at concentrations above their exemption levels could be exempted. The Agency believes it is appropriate to propose exemptions notwithstanding this issue for a number of reasons. For example, when evaluating wastes to determine whether they should be listed as hazardous, the Agency considers whether the levels of constituents of concern are hazardous, rather than whether constituents which cannot be quantitated may be present at levels above their health-based levels.

The Agency requests comments on this approach to this issue. While the Agency believes that this is a reasonable approach, it recognizes that the issue of non-quantifiable health-based exemption levels for some constituents may be of concern. Table 6 lists the exemption list constituents whose EQCs exceed their health-based exemption levels (based on a DAF of 1) by more than one order of magnitude (analysts should generally be able to achieve EQCs which are within one order of magnitude of the exemption level by fine-tuning the method). As noted in this table, not all of these constituents are expected to be prevalent in wastes (based on the prevalence analysis discussed in Section VI.C).

TABLE 6.—CONSTITUENTS WITH EXEMPTION QUANTITATION CRITERIA WHICH EXCEED THEIR HEALTH-BASED EXEMPTION LEVELS (BASED ON A MULTIPLIER OF 1) BY MORE THAN ONE ORDER OF MAGNITUDE

Acrylamide.
Acrylonitrile.
Aldrin.
Aramite.
Benzidine.
Benzotrithione.
Bis(2-Chloroethyl)ether.
Bis(2-chloroisopropyl)ether*.
Bromodichloromethane.
Chlorodibromomethane.
Diallate*.
Dibenz (a,h) anthracene.
3,3'-Dichlorobenzidine.
1,3-Dichloropropene.
Diethylstilbestrol*.
3,3'-Dimethoxybenzidine.
7,12-Dimethylbenz(a)anthracene.
3,3'-Dimethylbenzidine*.
2,4-Dinitrotoluene.
2,6-Dinitrotoluene.
1,4-Dioxane.
2378 PeCDDioxins.
Epichlorohydrin.
1,2-Diphenylhydrazine.
Epichlorohydrin.
Ethyl methanesulfonate*.
Famphur*.
23478 PeCDFuran.
Hexachloro-1,3-butadiene.
Kepone*.
3-Methylcholanthrene*.
2-Naphthylamine*.
2-Nitropropane.
N-Nitroso-di-n-butylamine*.
N-Nitrosodiethylamine*.
N-Nitrosodimethylamine*.
N-Nitrosodi-n-propylamine.
N-Nitrosomethylethylamine*.
N-Nitrosopiperidine*.
N-Nitrosopyrrolidine*.
Pentachloronitrobenzene*.
Pentachlorophenol.
Phenylene diamine.
Safrole*.
o-Toluidine*.
2,4-Toluenediamine.
p-Toluidine*.
Tris(2,3-dibromopropyl) phosphonate*

\* Not known to be prevalent in wastes.

The Agency requests comments on the other options presented below for quantitation of constituents whose EQCs exceed the health-based exemption levels:<sup>5</sup> the Appendix VII constituents for which their waste was listed.

• Facilities would be required to achieve quantitation limits as low as the health-based exemption levels for all of exemption constituents. This approach could be very costly and difficult to achieve and impose an unnecessary regulatory barrier for generator of wastes which contain only a few constituents.

<sup>5</sup> As a point of clarification, note that facilities are responsible for all constituents and that these options only focus on the subset of exemption list constituents whose QLs exceed their health-based exemption levels.



The Agency is also soliciting comments on whether facilities should be allowed to demonstrate through mass balances that a constituent could not be present at levels above its health-based levels. In addition, the Agency requests comments on whether an exemption demonstration should be considered adequate if all proper method and QC procedures are followed and the constituents are not detected, even though the EQC level has not been met. This situation could arise even in relatively clean matrices if the constituents bind strongly to the matrix or if the constituents degrade rapidly during the analysis. However, the Agency would not want the exemption to be allowed if the EQC could not be achieved because of interference from other contaminants in the matrix. The Agency requests comment on the use of mass balances in situations where such low concentrations may render the analysis meaningless.

#### *C. Development of Exemption Quantitation Criteria (EQC)*

The Agency's preferred way to determine reliable quantitation levels is through interlaboratory studies such as method performance evaluations. However, if data are unavailable from interlaboratory studies, quantitation limits are estimated based on the method detection limits and an estimated multiplier to account for laboratory variability and matrix effects.

To develop the EQCs proposed in today's notice, EPA compiled a master list of the quantitation limits published for the identified constituents in the third edition of SW-846, including the first update and the soon to be proposed second update (both of which are widely distributed throughout the regulated community). The Agency believes that the resultant list of EQCs associated with the methods specified in Appendices [x+1] and [x+2] presents achievable quantitation limits for the proposed exemption constituents.

The Agency believes that these EQCs achieve the most effective assessment of any adverse impact on human health and the environment that can be incorporated into a generic-type standard such as today's proposed rule. These quantitation limits are appropriate because the effect of an exemption would be to remove wastes and media from Subtitle C control. The Agency requests comments on the proposed quantitation limits as well as any data supporting those comments. Supporting documents are available in the docket for examination. The proposed methods and EQCs for each

constituent are presented in Appendices [x+1] and [x+2] of the proposed rule.

#### **VIII. Synthetic Precipitation Leaching Procedure**

To determine whether a waste qualifies for an exemption, the Agency is proposing that the TCLP test must be applied to the waste to evaluate its leaching potential. However, the Agency recognizes that the TCLP, which was developed to simulate the leaching potential of wastes codisposed with municipal solid wastes in a municipal landfill, may not always be appropriate for evaluating actual risks from other scenarios such as surface wastes or media or single waste monofills.

Therefore, the Agency is soliciting comment on the use of the synthetic precipitation leaching procedure (Method 1312) to measure the mobility of contaminants from wastes and media under the described management scenarios. Method 1312 is expected to be proposed for inclusion in the second update to the Third Edition of SW-846 in 1992. This method simulates the leaching process created by acidified precipitation. The Agency has included this method in its guidance for the evaluation of clean closures. The Agency believes that this leaching procedure may be an appropriate measure of contaminant mobility for certain wastes and media and, therefore is considering the use of this test in exemption demonstrations for certain wastes.

In Method 1312, which is fully described in the docket supporting this proposal, the waste is mixed with a mildly acidic aqueous leaching medium containing inorganic acid rather than the buffered acetic acid solution used in the TCLP. Beyond that, the procedure is essentially identical to the TCLP.

The Agency has completed precision and ruggedness studies on Method 1312. The studies indicate that Method 1312 produces a reasonably precise measurement of the mobilization of organic compounds and certain metals from soil. The method is also fairly rugged, showing little variation with any of the critical parameters that were tested (e.g., extraction fluid pH, extraction time, liquid/solid ratio) (EMSL, 1989). Based on this study, the Agency believes that Method 1312 may be appropriate for evaluating leaching of certain wastes.

Specific waste types where Method 1312 may be appropriate include soils, waste going on-site or regulated off-site monofills, wastes going to any industrial landfills which do not receive municipal wastes or other wastes which may generate organic acids. The Agency

solicits comments on the technical merits and the implementation issues which could affect these disposal scenarios.

#### **IX. Additional Exemption Criteria Under Consideration**

The Agency believes that the options presented for exemption criteria described earlier in today's notice (e.g., the exemption levels and testing requirements) are generally conservative and will serve as reasonable criteria for self-implementing hazard determinations. However, the Agency recognizes that the exemption levels are based solely on human health effects levels and primarily on risks of groundwater contamination. This Section outlines approaches to defining other exemption criteria which the Agency may consider as potential requirements for exemption demonstrations. If these criteria are not adopted as part of any rule finalizing this notice, EPA requests comment on the need for an omnibus authority that the Regional Administrator or authorized State official may use as an additional regulatory authority to require the application of these criteria or submission of additional information on a case-by-case basis if extraordinary site-specific considerations warrant evaluation of other factors. The Agency envisions such an authority to be rarely necessary.

The Agency seeks comment on the incorporation of a bioassay demonstration as a potential exemption requirement. If adopted, facilities would be required to demonstrate that their waste or contaminated media, as a whole, is not expected to have a detrimental impact on the environment through application of a bioassay procedure. Many types of bioassays exist, including those that measure toxicant effects on the growth and reproduction, acute lethality, mutagenicity, carcinogenicity, and teratogenicity to small mammals, fish, and invertebrates. The Agency believes that it may be appropriate to include a bioassay requirement because the exemption levels are geared toward human health effects. However, EPA acknowledges that bioassays may be very expensive to conduct, the results may be biased towards the test species used, and toxic manifestations may be difficult to extrapolate to mammals. EPA is not sure what assumptions would be appropriate when using laboratory results to predict field effects regarding fate and transport to receptor environments.



While the lowest exemption level (option 3, DAF of 1) are lower than or approximately equal to 60 percent of the Ambient Water Quality Criteria (see following discussion), the Agency believes that this approach would address additional concerns about whole waste (or leachate) effects on environmental receptors. The Agency compared the lowest exemption levels to the Ambient Water Quality Criteria (AWQC) (Gold Book, EPA 440/5-86-001). These criteria include promulgated criteria (AWQC), as well as "lowest observed effects levels" (LOELs) (which have not yet been promulgated). The water quality criteria are based on environmental water quality criteria (*i.e.*, acute and chronic fish (fresh and marine) toxicity), and human health water quality criteria (*i.e.*, human ingestion of fish, or fish and surface water). The exposure scenario underlying these numbers is based on surface water pathways. (See Note to File regarding Health-based Levels and AWQC in the Docket for Today's Rule.) Although EPA is well aware of the differences between CBEC and ECHO number, and AWQC, the Agency notes that linking leaching landfills to surface water contamination involves an extensive modeling and assessment effort which has not been performed on a notional basis. The Agency does not know the extent to which this is surface waster contamination routes of serious concern. EPA solicits comment on whether or not surface water contamination from landfill leachate is so site-specific and unusual that control of it is could best be addressed under the Regional omnibus authority proposed today, or whether CBEC/ECHO values need to be adjusted to reflect the level of control provided by AWQC.

The Agency has also considered numerical means of predicting possible additive effects from multiple constituents, but decided not to add risks from constituents for this proposal. The Agency does not have sufficient and adequate scientific information to establish a numeric method. The Agency is unsure of the relationship, if any, between constituents that reach the receptor at different points in time. Further, each receptor—bird, fish, human—has different physiological system for responding to exposure to toxicants. Primarily, the Agency was concerned that the difficulties of implementing such an approach outweigh any potential incremental benefits beyond the existing conservativeness of the exemption levels and the possible use of a 1,000

ppm exemption level cap. This approach is consistent with that used to evaluate delisting petitions which also does not incorporate additive effects. (Waste-specific additive effects are considered during RCRA corrective action and clean closure and in Superfund cleanups and may be considered in the evaluation of exemptions on a case-by-case basis.) Comments are requested on the proposal not to consider additive effects from multiple constituents in today's proposed exemption process.

The Agency also requests comment and supportive data on whether other exposure pathways should be considered for specific constituents and the exposure scenario(s) that would be appropriate in modeling those additional exposure pathways. One pathway of particular concern is volatilization to the atmosphere. The Agency's conservative analysis has demonstrated that air emissions from TSDFs may pose substantial risk in the absence of controls. The Agency is controlling these risks in two rulemakings (final rule 55 FR 25454, June 21, 1990, and proposed rule 56 FR 33490, July 22, 1991). Together, these rules would reduce the risk from air emissions from the vast majority of these facilities to well within the risk range of other RCRA standards. The emission reductions achieved by these rules could also significantly reduce the formation of tropospheric ozone, which has adverse effects on human health and the environment.

Today's rule could affect the TSDF air emissions regulations in the following way. The TSDF rules were designed to prevent volatilization of hazardous organics as they move through storage and treatment, keeping the organics in the waste until it ultimately undergoes BDAT treatment, which is assumed to remove any significant risk from exposure via the air medium. If, under today's HWIR proposal, waste leaves the system without BDAT treatment, that waste may pose a potential risk through exposure to air emissions. If significant risk exists, it may be necessary to develop air-based exemption criteria to supplement those suggested in today's proposal. In the Agency's July 21, 1991, proposal such criteria could entail additional waste testing. The Agency specifically requests comment on this issue, and on ways to address it. Comments on these topics should address the appropriateness of incorporating such pathways into the national exemption criteria versus allowing the Regional Administrators or authorized State officials to determine the need for consideration of additional

pathways (such as dermal exposure) on a case by case basis.

The options proposed today do not account for the effects of hazardous emissions into the air medium. In section 3004(n) of Hazardous and Solid Waste Amendments of 1984 (HSWA), Congress directed the Agency to promulgate regulations controlling air emissions from hazardous waste treatment, storage, and disposal (TSDF) facilities as necessary to protect human health and the environment. In developing these regulations, (Phase I final rule 55 FR 25454 (June 21, 1990), and Phase II proposed rule 56 FR 33490 (July 22, 1991)), the Agency estimated nationwide organic emissions to be approximately 1.8 megagrams per year (mg/yr)(2,000,000 tons per year). These emissions may contain toxic chemical compounds as well as ozone precursors. Since the effectiveness of these controls depends upon the fact that hazardous wastes are accounted for within the RCRA Subtitle C system, any exemption of wastes from this system has the potential of limiting the effectiveness of these controls on reducing the risk from hazardous air emissions. The Agency specifically requests comment on this issue, and on ways to address it.

Finally, the Agency recognizes that a few facilities may face difficulties meeting the exemption criteria because of very high background levels of one or more of the constituents on the exemption list in their soil or groundwater. Data from EPA Region VIII indicates high background levels of arsenic, beryllium, and chromium that appear to exceed some of the exemption levels when dilution or attenuation is not considered (this information is available in the public docket for this rule). The Agency is requesting comments on whether the exemption rule should include provisions for making statistical comparisons to background levels. One possible statistical technique for background data that conform to normality assumptions includes combining the Student-t difference of means test presented in the Permit Guidance Manual on Unsaturated Zone Monitoring for Hazardous Waste Land Treatment Units, (EPA, 1986) with the normal tolerance interval approach found in Statistical Analysis of Ground Water at RCRA Facilities—Interim Final Guidance, (EPA, April 1989). The Student-t test compares averaged waste/media concentrations to background concentrations, and is used to determine if the waste/media as a whole is within a specified criteria. However, even if the waste/media

passes the Student-t test, individual sample concentrations may still exceed the tolerance interval limit. The normal tolerance interval approach is used to compare sample concentrations to an upper tolerance value based on the background mean, standard deviation, and sample size.

If such an approach is incorporated into the final rule, it would include criteria for defining and collecting adequate background samples. More specifically, the facility would be required to identify background locations, sample size, soil depth, etc. for at least four samples in a "difference of means" demonstration, and six to eight samples for a "tolerance of means" demonstration. The facility would also need to demonstrate the normalcy of the sample distribution. The Agency would require that this information be included as part of the facility's sampling and analysis plan and subject to review by the appropriate Regional Administrator or authorized state official prior to plan implementation. Alternatively, the rule could defer any background level demonstrations to an omnibus authority designated to the Regional Administrator. Comment is requested on the need for this authority.

The Agency solicits comments on other appropriate and generic ways (1) to identify background levels in soils, and (2) to incorporate the existing 40 CFR part 264, subpart F standards for establishing background levels for groundwater. Other suggestions that address the Agency's intent to promulgate a simplified exemption with little reliance on site-specific considerations but also allow for consideration of elevated background levels will be considered.

#### X. Dilution

The 1984 RCRA Amendments (HSWA) established a national policy for minimizing the generation of hazardous wastes. Section 1003 of RCRA, as amended in 1984, established a national waste minimization policy stating that "wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible". The policy also cited the need to reduce the volume and toxicity of hazardous wastes which is nevertheless generated. Similarly, section 3005(h) prescribed that effective September 1, 1985, all RCRA permittees who generate waste disposed of, treated, or stored on-site must certify (on an annual basis) that the facility has waste minimization programs in place. In addition, section 3002(b) mandates that hazardous waste generators include a certification with their hazardous

waste manifests that the generator has a waste minimization program in place and that the proposed method of off-site management minimizes threats to human health and the environment. In concert with these HSWA mandates, it is the Agency's policy to encourage source reduction and waste treatment as preferable to disposal and dilution.

EPA has also recognized that successful implementation of the land disposal restrictions requires that, in general, dilution be prohibited as a partial or complete substitute for adequate treatment of prohibited toxic wastes (40 CFR 268.3). The legislative history indicates that dilution "is not an acceptable method of treatment to reduce the concentrations of hazardous constituents" (S. Rep. No. 284, 98th Congress, 1st Session 17 (1983)).

The Agency also generally opposes the dilution of hazardous wastes for several technical reasons. Most importantly, dilution is an environmentally inappropriate means to reduce toxicant concentrations when other alternatives are possible, because it does not reduce toxicant loadings to the environment. The same mass of toxicant is released to the environment when a diluted waste is disposed as would be if that same waste, prior to dilution, were to be disposed.

For these reasons, dilution is prohibited as a means to achieve the exemption levels under today's proposal. Because under some options proposed today, the rule could impact the LDR levels, allowing dilution as a means of achieving exemptions would be inconsistent with the ban on dilution included in the land disposal restrictions rules (40 CFR 268.3). In addition, dilution would be inconsistent with the Congressional mandate to treat rather than dilute toxic wastes and the purpose of this rule (e.g., to encourage treatment of listed wastes). Thus, today's proposed rule specifically prohibits dilution as a means of attaining the exemption levels in accordance with the dilution requirements of the LDR program (see 40 CFR 268). Such prohibition is likewise authorized by section 3004(a)(3), which allows EPA to prescribe treatment methods, techniques and practices as may be necessary to protect human health and the environment.

The Agency considers dilution to be the addition of any other material, either liquid or non-liquid, to increase the volume of a given waste to reduce waste constituent concentrations. For example, the unnecessary addition of non-process waters (e.g., cooling waters) to a wastewater treatment system to achieve exemption levels is a form of

inappropriate dilution. Similarly, the addition of clean soil to contaminated soil to achieve exemption levels is another type of prohibited dilution (see 55 FR 22666; June 1, 1990).

The Agency recognizes that many treatment methods require the addition of reagents. These reagents produce physical and/or chemical changes, and do not merely dilute the hazardous constituents into a larger volume of waste so as to lower the constituent concentration. In prohibiting dilution as a substitute for adequate treatment, the Agency does not intend to prevent facilities from adding materials that are necessary to facilitate proper treatment to meet the proposed exemption levels.

A facility claiming an exemption must be prepared to provide justification that these additives are necessary for treatment. Moreover, the facility must be able to show not only that the material is added for purposes other than dilution, but also that the amount added is no more than what is necessary to effect the physical/chemical changes. The facility must have this justification available on site and ready at all times for inspection by the Agency or State officials. For example, consider a facility which is conducting lime stabilization on existing hazardous lagoon sludge using 40 percent lime and has demonstrated that the resultant stabilized material meets the exemption concentrations. This facility must have evidence to demonstrate that the 40 percent lime mixing ratio is required and that a significantly smaller mixing ratio (such as 10-20 percent lime) would not work as effectively.

#### XI. Implementation

##### A. Overview

As discussed above, there are two different structural approaches in today's rule: (1) The ECHO approach, which would unify entry and exit levels for subtitle C and (2) the CBEC approach, which alternatively would establish a generic exit from subtitle C. In addition, the Agency is proposing a "contingent management" approach, which could be combined with either ECHO or CBEC to provide an additional exit for subtitle C hazardous wastes that are managed under conditions which the Agency determines to be protective. These approaches raise different implementation issues.

##### 1. ECHO

The ECHO approach would expand the current hazardous waste characteristics and set uniform entry

and exit concentration levels for subtitle C jurisdiction. The ECHO approach thus would be implemented through the current subtitle C regulations.

As is currently required, generators would be responsible for determining whether their wastes are characteristically hazardous. This could be done either by testing the wastes according to the methods set forth in subpart C of 40 CFR part 261, or by applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used. See 40 CFR 262.111. Wastes exhibiting a hazardous characteristic would be subject to all applicable subtitle C regulations. Generators of wastes which become newly regulated as hazardous wastes under the ECHO criteria would be required to submit notifications of hazardous waste management activity using EPA form 8700-12.

As a result of the ECHO approach, some wastes currently under subtitle C jurisdiction would no longer be regulated under that program. It will be important for the Agency to have information regarding what wastestreams are exiting the system to oversee the transition to the new jurisdictional criteria. The Agency will also need this information to appropriately adjust its compliance monitoring program to account for changes in the status of generators that previously had notified of hazardous waste management activity. Therefore, if the ECHO approach is chosen, the Agency would require generators of what had been listed wastes that are exiting the subtitle C system as a result of ECHO to test their wastes for all Appendix VIII constituents and to submit to the Regional Administrator a one-time notification and certification that their wastes do not exhibit hazardous waste characteristic. Generators of listed waste as of the effective date of ECHO will continue to be subject to subtitle C regulations until the Agency receives the notification that the waste does not exhibit a characteristic. (Wastestreams newly regulated as a result of ECHO and new wastestreams generated after the effective date of ECHO would not be subject to the mandatory one-time testing and notification requirement, but would have to notify under EPA form 8700-12.) This notification could require various types of information. A more detailed discussion of ECHO of the implementation, including the testing requirement and proposed notification and certification, is set forth below.

## 2. CBEC

The CBEC option would establish a baseline set of constituent-specific exemption levels for waste and contaminated media. Wastes and media with hazardous constituent concentrations below the baseline exemption levels would be conditionally exempt from subtitle C.<sup>6</sup> As an exemption program for wastes which the Agency has determined are hazardous, but not at levels of regulatory concern, certain requirements would be imposed in order to ensure the eligibility of the wastes for the exemption. These requirements would differ from the requirements which currently exist to determine entry into the subtitle C system (and which would continue to apply should the existing characteristics be expanded under ECHO). These requirements would be considered necessary to ensure that only those hazardous wastes which truly met the exemption criteria exited the subtitle C system.

The Agency is proposing that CBEC exemptions be self-implementing. No Agency review of sampling plans or data, or prior Agency approval, would be required before wastes or media could be managed as nonhazardous. The Agency is proposing sampling, testing, notification and recordkeeping requirements as conditions that must be met by a generator to qualify for the generic exemption.

The Agency is proposing that, to claim a CBEC exemption, wastes and media must be sampled and tested annually for the first two years.<sup>7</sup> Thereafter, a waste or media need only be tested every three years. In the first year, the waste or media must be tested for all 200 of the exemption list constituents. In subsequent years, a waste or media need only be tested for those constituents which were detected during the previous year of testing. Additional testing would also be required whenever process changes occur that could affect waste or media composition. All 200 of the exemption list constituents would need to be tested for after such a process change, unless the generator can demonstrate and document a reasonable basis for testing for a more limited number of constituents. Generators may not use their knowledge of the waste or media to determine whether the waste

or media is exempt under a CBEC exemption. (Knowledge of the waste could be used as a basis for more limited testing in the event of a process change.) The determination must be based on sampling and analysis that conforms with the data requirements discussed below.

Testing would be done in accordance with a sampling and analysis plan that includes the basic elements of sampling and analysis plans described in Chapter One of SW-846. This would include a detailed description of the planned sampling protocols and equipment, statistical methods to ensure that the samples are representative, quality assurance plans, any expected modifications of the SW-846 analytical methods listed in Appendices [x+1] or [x+2] and, as applicable, proposed analytical equipment, etc.

A generator claiming a CBEC exemption would submit to the Regional Administrator (or authorized State) an initial notification of that claim and a certification stating that the information contained in the notification is complete and accurate. The exemption for CBEC waste or media would become conditionally effective as of the date that the Regional Administrator receives, via certified mail with return receipt, the facility's notification and certification.

Generators would retain the following documentation on-site for at least three years after the date of notification: a copy of the notification and certification; the sampling and analysis plan, a sampling record that supports all sampling events and demonstrates that the samples are representative of the temporal and spatial variability of the waste; and analytical laboratory results for all samples.

Generators claiming a CBEC exemption would be required to re-test and re-submit their waste or media notifications and certifications annually for the first two years, and every three years thereafter. Should a change in process occur that could affect waste or media composition, generators also would be required to re-test and submit a new notification and certification reflecting the process change.

Generators would have to meet all of the applicable conditions to qualify for the CBEC exemption. The Agency is proposing that any misrepresentation, erroneous demonstration, or incomplete adherence to the conditions would make the waste or media ineligible for the exemption and the waste or media would thus be subject to all subtitle C management requirements. Even if the exempted waste or media is the only

<sup>6</sup> Exempted wastes would continue to be solid wastes, and as such would require proper management under subtitle D. Further, this generic cut-off would set a level at which media was no longer contaminated with a listed hazardous waste.

<sup>7</sup> Note that this requirement would not apply to generators claiming exemptions for waste or media that are generated or managed on a one-time basis.

hazardous waste generated by the facility, the facility will retain its EPA identification number and is subject to all applicable hazardous waste regulations if the exempted waste or media reverts to a hazardous waste through reconstitution, treatment, process upsets or changes, or any other reason.

### 3. Contingent Management Exemptions

The contingent management exemption would apply to wastes and contaminated media with hazardous constituent concentrations greater than the ECHO or CBEC constituent concentration levels, but less than or equal to a second higher set of constituent-specific exemption levels. These wastes and media would be conditionally exempt from subtitle C requirements so long as they are managed in accordance with the management practices being proposed today. Wastes and media meeting these "contingent management" levels and that are not managed in accordance with the specified management practices would be hazardous wastes subject to full subtitle C jurisdiction.

The Agency is proposing that the contingent management exemption be self-implementing. No Agency review of sampling plans or data, or prior Agency approval, would be required before wastes or media could be managed under contingent management conditions.

The Agency proposes that the contingent management exemption would be conditioned upon three requirements: (1) sampling and testing according to the same standards as those that would apply for the CBEC exemption; (2) submittal (and re-submittal) of the same notification and certification as would be required for the CBEC exemption; \* and (3) disposal of the waste in accordance with the management standards established by this rule.

Because a contingent management exemption is conditioned on the proper management of the waste or media—i.e., disposal in accordance with specific management standards—the Agency is proposing that the exemption would not become effective until the waste or media is actually disposed of in accordance with the management standards (e.g., when wastes or media enter a qualifying disposal unit). The waste or media, therefore, must be

managed as a subtitle C hazardous waste from the point of generation until disposal. It would be subject to all of the applicable RCRA requirements. This includes 40 CFR parts 262 and 263, which contain, among other provisions, the manifest, waste accumulation and export provisions. Furthermore, the receiving facility would have to manage the candidate exemption waste or media as a hazardous waste if it cannot dispose of the waste or media without prior storage.\*

This implementation structure is intended to help ensure safe management of the waste or media prior to satisfaction of the condition justifying the exemption. For example, if a candidate waste was spilled during transport it would be a hazardous waste because disposal did not occur in a qualifying unit. The Agency, therefore, believes that it would be important to impose the same controls on transport of the candidate second tier exemption waste as would be imposed on transport of the same waste if it was destined for a subtitle C facility. The Agency also believes that continuing to manage the candidate exemption waste as hazardous prior to disposal provides a simple implementation structure. For example, rather than setting up two alternative waste tracking systems, generators would be able to utilize a single form. Use of the manifest also helps to minimize conflicts that may arise if waste moves through states which have not adopted the contingent management exemption.

The generator would have the burden of demonstrating that all of the conditions for the contingent management exemption described above have been met. In an enforcement action, a waste or media for which an exemption is claimed would be considered a subtitle C hazardous waste unless the generator was able to produce evidence that all of the conditions of the exemption have been met. Failure of a disposal facility to manage candidate exemption wastes in accordance with the management standards would also nullify the exemption. In such instances, the waste would remain a hazardous waste and the facility would become a subtitle C treatment, storage, and disposal facility.

\* The Agency is proposing to amend 40 CFR 264.1 to allow facilities disposing of contingent management wastes (and solid wastes) to store contingent management wastes for up to 10 days without becoming a subtitle C treatment, storage, and disposal facility. The Agency requests comment on whether 10 days is a sufficient or appropriate length of time, and if not, what time period may be appropriate.

### B. Implementation of the ECHO Approach

The ECHO approach would expand the current hazardous waste characteristic approach to subtitle C jurisdiction. Wastes determined to be hazardous under the ECHO approach would be subject to all applicable subtitle C regulations to the same extent that characteristic hazardous wastes are currently subject to subtitle C regulations.

ECHO would establish no new requirements for characteristically hazardous wastes than currently exist, except for the testing and one-time notification discussed below. Generators bear the responsibility to ensure that their waste determination is accurate. As long as the generator manages the waste as nonhazardous, the generator must be able to demonstrate that the waste does not exhibit a characteristic. As with other characteristics, generators may rely on test results, knowledge of the waste, or some combination of the two methods. Under ECHO, generators would not be required to test their wastes (except for generators of listed wastes subject to the onetime notice) or retest periodically or in the event of a process change. The current regulatory requirements and the operational practices of transporters and TSDFs assume that legal liability encourages generators to test their wastes whenever there is reasonable uncertainty that the waste exhibits a hazardous waste characteristic. Although the Agency recommends that generators of characteristic waste retest after any process change which may affect the hazardous composition of a waste, the Agency recognizes that the hazardous waste characteristics apply to a wide range of waste streams. With such a wide variety of streams regulated under the characteristic, the Agency believes that there may be some waste streams for which process knowledge may be sufficient to determine if a waste exhibits a characteristic.

As now, under ECHO the Agency would encourage generators to conduct and document their sampling and analysis of their waste, if conducted, in light of the possible legal liability. However, the Agency does not now require generators to document the sampling and analysis that informed their waste management decisions and would not do so under ECHO. As now, under ECHO generators would have the flexibility to determine the appropriate level of sampling, analysis, and documentation for their waste determinations.

\* Contingent management exemption claimants would also be required to resubmit the notification and certification whenever there is a change in the identity of the disposal facility receiving the waste or media.

As discussed above, under the ECHO approach some wastes currently regulated under subtitle C would exit that system. The Agency is proposing that generators of wastestreams that had been considered listed wastes but which would no longer be hazardous waste under ECHO be required to analyze their wastes for all Appendix VIII constituents and submit to the Regional Administrator one-time notifications of the change in the regulatory status of their wastes and certifications that their wastes do not exhibit a hazardous waste characteristic. Facilities for which only some waste streams would exit subtitle C and which would still continue to manage some hazardous waste would still be required to submit this notification and certification. The Agency is proposing that testing for the one-time notification be conducted according to the methods set forth in subpart C of 40 CFR part 261.

Under this proposal, generators of listed wastes as of the effective date of ECHO would remain subject to subtitle C jurisdiction until the Agency received the notification. Thus, for those generators, ECHO would operate as a conditional exclusion. Generators of wastes that become newly regulated as a result of ECHO and generators of new wastestreams after the effective date of ECHO would not be subject to the one-time testing and notification requirement, but would be subject to the waste determination requirement of 40 CFR 262.11 and would be required to notify the Agency if they were managing a hazardous waste, using EPA form 8700-12. ECHO would not operate as a conditional exclusion for those generators.

The Agency is proposing that the notification include the following information: (1) The name, address, and RCRA ID number of the facility; (2) the EPA hazardous waste code applicable to the waste; (3) the characteristics and constituents for which the waste was evaluated under the ECHO criteria; and (4) the constituent concentrations in the waste which form the basis for the claim that the waste is not characteristically hazardous.

The notification would be accompanied by a certification by a responsible corporate officer that the information contained in the notification is complete and accurate. The Agency requests comment on whether the notification and certification should also be required of generators of wastes currently considered to exhibit the toxicity characteristic, if under ECHO the constituent concentration levels

change such that the waste would no longer be considered to exhibit the toxicity characteristic.

It should be noted that units managing wastes that would no longer be hazardous under the ECHO criteria would continue to be regulated hazardous waste management units subject to the requirements of parts 264 and 265, including the closure requirements. A unit receiving only waste that is shown not to be a hazardous waste under the ECHO criteria would no longer be receiving hazardous waste upon the effective date of the ECHO criteria and thus normally would become subject to subtitle C closure requirements. How closure requirements would apply to these units is discussed in section XIII.E.

ECHO also may bring new wastes into the subtitle C system. Generators of wastes which become newly regulated as hazardous wastes under the ECHO criteria would be required to submit section 3010 notifications of hazardous waste management activity using EPA form 8700-12 and obtain EPA identification numbers. Newly regulated facilities, *i.e.*, facilities at which the only hazardous wastes that are treated, stored, or disposed are wastes newly regulated under ECHO will have to qualify for interim status by the effective date of the rule in order to continue managing wastes that become newly hazardous prior to obtaining a permit. To obtain interim status, eligible facilities will have to submit section 3010 notifications by the effective date of the regulation and part A applications by no later than six months after publication of the final ECHO rule. To retain interim status, a newly regulated facility will have to submit a RCRA permit application within one year after the effective date of the rule and certify that the facility is in compliance with all applicable groundwater monitoring and financial responsibility requirements (*see* RCRA Section 3005(e)(3) and 40 CFR 270.73(d)). Permitted and interim status facilities which manage a solid waste that is newly defined as hazardous waste as a result of ECHO will have to submit Class 1 permit modification requests or part A permit application revisions to EPA. Facilities will have to manage these wastes in accordance with 40 CFR part 265 or 40 CFR part 264 until permit modification or issuance, depending on whether the waste is managed in a newly regulated or previously regulated unit.

### *C. Implementation of the CBEC Approach*

#### **1. Sampling Requirements for CBEC Exemptions**

In today's notice, as an alternative to ECHO, the Agency has proposed concentration-based exemption levels at which a solid waste or media would not be considered hazardous. To ensure that facilities accurately characterize constituent concentrations in their wastes, the Agency is proposing a series of sampling and analytical requirements to be imposed upon persons seeking CBEC exemptions that would be codified in Appendix (x+3) to 40 CFR Part 261. These requirements are viewed as the minimum necessary to make a CBEC exemption determination. Following these requirements, however, does not imply that the determination will be adequate. It is ultimately the responsibility of the generator to ensure that the sampling and analysis is accurate and representative of its wastes.

*Changes in waste composition or leaching characteristics.* At any time where there is a process or other change which may affect waste composition or leaching characteristics, the facility would be required to re-characterize the waste and determine that the waste continues to meet the applicable exemption levels before disposing of the waste as non-hazardous. Results would be retained documenting the process, or other changes, the testing undertaken, and the resulting changes in waste composition. Should the results indicate that the waste does not meet the applicable exemption levels, that waste, and any subsequently generated wastes, would be required to be managed as a hazardous waste until the generator notifies the Regional Administrator that the operating and/or waste management process produces waste meeting the exemption criteria. Although the Agency believes it is important that any process change that could affect the ability of the waste to qualify for a CBEC exemption be evaluated, it is also very difficult to define or quantify what process changes would affect waste composition or leaching characteristics. Not all process changes would necessarily affect waste composition. The Agency has not yet developed regulatory language which better defines the process changes which would nullify a CBEC exemption and require retesting, renotification and recertification. The Agency requests comment on how best to describe such a process change in the regulations. The Agency notes that, because testing is not required to



determine entry into subtitle C, and thus there are no re-testing requirements, the Agency would not have to define "process change" if the ECHO approach is chosen.

The facility will also be held liable for any changes in the waste after generation which may cause the waste to revert to a hazardous waste. For example, if an exempted waste were managed in such a manner that it becomes more concentrated over time (e.g., reconstitution) due to evaporation or other factors, the facility is responsible for determining that the waste continues to meet the exemption criteria.

*Data evaluation.* The Agency is proposing that, for CBEC exemptions, facilities would be required to evaluate their wastes, contaminated media or materials based on the maximum detected concentrations of the exemption constituents. This conservative approach is consistent with the delisting program's general approach to evaluating wastes petitioned for exclusion. While the Agency believes that this approach is the most appropriate approach for a self-implementing exemption program, the Agency is also taking comment on whether to evaluate analytical results in terms of average concentrations or some other data evaluation mechanism (e.g., at some confidence interval). For example, in determining whether a waste exhibits a hazardous waste characteristic, chapter 9 of SW-846 requires the use of the upper limit of the 80% confidence interval for the mean. In addition, the Agency solicits comments on implementable techniques for the identification of analytical outliers.

*Sampling and analysis plan.* The Agency is proposing that all facilities seeking a CBEC exemption prepare a sampling and analysis plan. In general, the sampling and analysis plan must demonstrate that the samples to be taken and analyzed will be representative of any spatial and temporal variations in the exemption-candidate waste or media. The facility would be required to repeat the sampling and analysis demonstration according to the frequency set forth in the regulations. More frequent sampling will be necessary should there be any significant changes in the production or waste treatment process or when the minimum sampling requirements are insufficient to be representative of the waste. The sampling and testing burden for facilities that routinely change their production processes, e.g., by changing chemical feedstocks, will be greater than for a facility with a stable and

consistent process. The specific requirements being proposed for sampling and analysis plans would be codified in Appendix (x+3) to 40 CPA part 261.

The sampling and analysis plan would have to demonstrate that sampling will be representative of routine changes in production processes and/or treatment processes both during a specific sampling event and across all operating conditions. The sampling and analysis plan would also have to address any process upsets or other factors which may affect waste or media composition or leaching characteristics. The Agency believes that an adequate determination will generally need to include more than the minimum sampling requirements to provide a fully representative demonstration of the composition and leaching characteristics of the candidate waste or contaminated media.

Each time the facility samples the subject waste or media, the facility or its agent would be required to document that the sampling and analysis plan has been followed. Problems encountered during the sampling event, and corrective measures taken to ensure the integrity of the process, must be documented and retained for at least three years. See discussion of recordkeeping at section XI.E.

## 2. Testing Requirements for CBEC Exemptions

Facilities would be required to use the analytical procedures described in SW-846, 3rd edition when analyzing their wastes or contaminated materials for exemption determinations. To use equivalent procedures to SW-846, a claimant must petition the Agency in accordance with 40 CFR 260.21. Due to the wide variation in the occurrence and concentration of hazardous constituents in wastes and contaminated materials, each generator would be required to test each waste or material for which they seek a CBEC exemption for all of the exemption list constituents. In addition, the facility would not be able to make the determination that a listed hazardous waste or contaminated material meets the exemption levels based on his knowledge of the waste or material.

The Agency is requesting comment on the appropriateness of requiring analysis for all 200 constituents for the first year the exemption is claimed, and requiring analysis in subsequent demonstrations for only those constituents previously detected. The Agency is proposing this approach because it believes that there is a heightened need to ensure that wastes leaving the hazardous waste

management system do not contain any hazardous constituents above the applicable exemption levels. The Agency believes that this approach balances the need for a comprehensive and objective basis for waste management decisions with the need to make the exemptions practically available to generators of waste that meet the appropriate exemption levels.

There could be other ways to balance the above concerns. One option would be to require analysis for all 200 constituents every year the exemption is claimed. This approach is very comprehensive and favors the need to ensure continued applicability of the waste management decision, but may impose a practical barrier to generators who might otherwise be eligible for the exemption. Comment is requested on whether the information that would be gathered through annual testing for all 200 constituents is necessary to ensure continued applicability of the exemption. Comment is also requested on what the burden of requiring annual testing for all 200 constituents might be for generators.

Another option is for EPA to define, in regulations, for major waste streams, a set of constituents that it believes would fairly characterize those waste streams. EPA believes such an approach may be desirable in the long term to reduce costs, especially in industries with large numbers of generators. EPA asks for comment on the feasibility, or need, for this approach in the long term. The Agency notes that this could require it to expend significant resources. The Agency requests comment on whether such knowledge will arise as these programs are implemented and transporters impose their own requirements.

Yet another option would be to allow the generator to use process knowledge to determine which exemption constituents are likely to be present in their waste and test for those constituents. This option would minimize the potential barrier that testing might pose for generators seeking an exemption, but could be less comprehensive. Comment is requested on whether process knowledge provides a sufficiently objective and comprehensive basis for determining which constituents to test for. This approach is comparable to the system under the ECHO approach. This system relies on the substantial threat of civil liability, including CERCLA liability, to encourage generators to ensure that their wastes either are not characteristically hazardous under ECHO or ineligible for CBEC. The



Agency requests comments on other options as well.

The Agency is proposing the Toxicity Characteristic Leaching Procedure (Method 1311) as the method to model concentrations of hazardous constituents found in waste and soil extracts. TCLP extract concentrations will be compared to the levels specified in appendix [x+2]. These exemption determinations must be based solely on the results of testing. The Agency is asking for comment on whether both total compositional and leachate analysis for all of the exemption constituents be conducted on all soil samples. As discussed in Section VIII, the Agency is also taking comment on the Synthetic Precipitation Leaching Procedure (Method 1312) as an appropriate protocol for modeling concentrations of hazardous constituents in soil extracts for exemption determinations. The facility would have to demonstrate that concentrations of hazardous constituents found in the subject contaminated soil and in its Method 1312 leachate are below the levels specified in appendix [x+1].

As part of the record, generators must retain analytical results on site for at least three years. See discussion of recordkeeping at section XI G. These results, as well as any other required document, would have to be submitted to the Regional Administrator upon request. At a minimum, analytical reports must include the following: (1) The name and address of the laboratory performing the waste analyses; (2) the names and qualifications of persons performing analysis; (3) date of analysis; (4) description of sample preparation techniques used for extraction of the samples; (5) a description of the tests performed, testing results, and quality assurance/quality control (QA/QC) documentation; and (6) the names and model numbers of the instruments used in performing the tests. The specific QA/QC requirements associated with the specific methods listed in Appendices [x+1] and [x+2] must also be followed.

The Agency requests comments on whether the Agency should require that all CBEC exemption analyses be conducted by independent laboratories as an added assurance of the validity of test results. The Agency also requests comment on whether it should require facilities to analyze spiked samples prepared by EPA laboratories on a periodic basis as a means of measuring the qualifications of the facility's laboratory, and what the costs of such a requirement might be for the Agency

and the regulated community. The Agency also seeks comment on other analytical options aimed at ensuring the accuracy and validity of exemption determinations.

### 3. Notification Requirements

To qualify for a CBEC exemption, a generator would need to submit to the Regional Administrator a formal notification of its claim that wastes or media are nonhazardous as a result of the concentration-based exemption criteria. The notification would be required to include an accompanying certification by a responsible corporate officer that the information contained in the notification is complete and accurate.

Generators continuing to generate or otherwise manage waste or media for which they continue to claim a CBEC exemption would be required to re-submit the notification and certification (and retest the waste or media) annually for the first two years an exemption is claimed. Thereafter, re-submittal of the notification and certification (and retesting of the waste or media) would be required once every three years and when changes occur to the process that could affect waste or media composition.<sup>10</sup> The Agency is proposing this schedule of testing as a means to ensure continued applicability of the exemption through periodic "checks" on the data. The Agency is taking comment on whether this schedule is sufficient or unnecessary to accomplish this goal, and on what other schedules of testing could provide assurance of continued applicability of the exemption. The Agency is asking for comment on whether re-testing and re-submittal of the notification and certification should be required more or less frequently than the schedule proposed today. The Agency is also requesting comment on whether re-testing and re-submittal of the notification is necessary at all.

The absence of either a re-submittal or appropriate re-testing would breach the procedural conditions upon which the exemption is based; without a re-submittal and appropriate re-testing the waste or media would be considered a hazardous waste and subject to subtitle C requirements. If a generator finds that the exempted waste or media no longer meets the exemption criteria, the generator immediately must comply with all applicable requirements for generators of listed wastes, or for owner/operators of treatment, storage,

or disposal facilities, under 40 CFR 262-270 (including renotification of hazardous waste management activity using EPA form 8700-12).

The Agency is taking comment on whether generators should be required to submit their sampling and analysis plans and analysis data to the Agency prior to the effective date of their exemptions. Pre-submission of the sampling and analysis plan and the analysis data could be coupled either with a program that would require prior Agency approval before implementation of an exemption claim or with a more self-implementing approach. Under a more self-implementing approach, the sampling and analysis plan would be required to be sent to the Regional Administrator, but a generator could proceed to test according to the sampling and analysis plan unless it was otherwise notified by the Regional Administrator after a set time (for example, 60 days after Agency receipt of the plan). After testing, the facility would submit the data to the Regional Administrator. The exemption would become conditionally effective a set time (e.g., 60 days) after Agency receipt of the data, unless the facility was otherwise notified by the Regional Administrator. The Agency is taking comment on whether this approach would discourage generators from taking advantage of the exemption, for example due to the time periods associated in obtaining the exemption. The Agency also requests comment on whether the time periods associated with this approach would result in a substantial amount of low risk waste being disposed of in subtitle C facilities that would otherwise be eligible for an exemption.

Comments are also requested on whether generators that have successfully determined that their wastes are nonhazardous under the concentration-based exemption criteria should be required to notify off-site facilities that they are delivering exempted wastes to those facilities. Similar notices are required by the land disposal restrictions program for the delivery of certain hazardous wastes to landfills (e.g., 40 CFR 268.7(a)(2)).

### 4. When CBEC Exemptions Become Effective

The Agency is proposing that CBEC exemptions become conditionally effective for wastes and media upon receipt of the notification and certification by the Regional Administrator (or the authorized State official). The Agency is also proposing that facilities submit their notifications

<sup>10</sup> The renotification and recertification requirements would not apply to facilities submitting notifications for wastes or media that are generated or managed on a one-time basis.

and certifications by certified mail with return receipt to serve as evidence that the Agency has received the package.

The Agency is proposing that any misrepresentation, erroneous demonstration, or incomplete adherence to the above conditions would make the waste ineligible for the exemption and the waste would thus be subject to all Subtitle C management requirements. If the generator fails to support a CBEC exemption claim with accurate analytical data, complete sampling plans, and signed certifications, and/or any other procedural requirement, the Agency will consider the demonstration invalid and the waste or media to be a listed hazardous waste.

The Agency is taking comment on whether the Regional Administrator should have the authority to require additional analysis, such as quantitation to non-Appendix VII constituent exemption levels, or to evaluate factors not considered in the exemption criteria, such as aquatic impacts, additive effects, or food chain considerations. The Agency recognizes that broad exemption criteria such as the CBEC exemption criteria proposed today may not, in isolated cases, address all critical risks. Thus the Agency requests comment on granting omnibus authority to the Regional Administrator (or authorized State official) to consider other factors that may cause a CBEC exemption waste to remain hazardous, when necessary to protect human health and the environment. The Agency requests comment on what the potential costs of implementing this authority may be for both the regulated community and the Agency.

The Agency is also requesting comment on how, procedurally, the Regional Administrator (or authorized State official) would exercise this omnibus authority. Under today's proposal, CBEC exemption claims would become effective upon notification and certification of the claim, but data would not be submitted to the Regional Administrator for review unless requested. One way the Regional Administrator could be able to exercise the omnibus authority would be to establish a new variance procedure similar to that at 40 CFR 260.40 and 41, which set forth criteria and procedures for Regional Administrators to impose additional requirements on persons accumulating or storing certain recyclable materials that would otherwise be exempt from regulation. It should be noted that these procedures place the burden on the Regional Administrator to demonstrate the necessity of exercising the variance. The

provisions at 40 CFR 260.40 and 41 set forth, among other requirements, procedures for providing facilities with notice of the basis for the decision and allow the facility 30 days to respond. The procedures also provide an opportunity for a hearing, and for appeal of the decision to the Administrator. In addition to the kind of procedural requirements required at 40 CFR 260.41, the Agency could require that Regional Administrators must either consult with or obtain prior approval from the Administrator before sending a notice to an exemption claimant. This provision, however, could conflict with the ability to appeal a decision to the Administrator. A final decision to impose additional requirements through the omnibus authority would apply prospectively only. The Agency requests comment on this and any other procedural mechanism for the exercise of omnibus authority by the Regional Administrator (or authorized State official).

#### *D. Implementation of the Contingent Management Exemption*

##### **1. Sampling Requirements for Contingent Management Exemptions**

The Agency is proposing that the sampling requirements for the contingent management exemption be exactly the same as those proposed for the CBEC exemption. This is proposed for the contingent management exemption, regardless of whether it is combined with the ECHO approach or the CBEC approach. The Agency requests comment on whether the sampling requirements for the CBEC exemption would still be appropriate if combined with the ECHO approach.

##### **2. Testing Requirements for Contingent Management Exemptions**

The Agency is proposing that the testing requirements for the contingent management exemption be exactly the same as those proposed for the CBEC exemption. This is proposed for the contingent management exemption, regardless of whether it is combined with the ECHO approach or the CBEC approach. The Agency requests comment on whether the testing requirements for the CBEC exemption would still be appropriate if combined with the ECHO approach.

##### **3. Notification Requirements for Contingent Management Exemptions**

To qualify for a contingent management exemption, under either the ECHO or the CBEC approach, a generator would need to submit to the Regional Administrator a formal

notification of its claim that wastes or media are nonhazardous as a result of the specific type of management it will receive. The notification must include an accompanying certification that the information contained in the notification is complete and accurate. The Agency is proposing that Agency receipt of the notification and certification be one of three conditions that must be met before wastes media can be managed as non-hazardous under the contingent management exemption. The Agency is also proposing that facilities submit their notifications and certifications by certified mail with return receipt to serve as evidence that the Agency has received the package.

Generators continuing to generate or otherwise manage waste or media for which they continue to claim a contingent management exemption would be required to re-submit the notification and certification (and retest the waste or media) with the same frequency and under the same conditions as is being proposed for CBEC exemptions. In addition, generators would have to submit new notifications and certifications when the identity of the disposal facility changes. If a generator finds that the exempted waste or media no longer meets the constituent concentration levels applicable for the contingent management exemption, or that the management standards at the receiving facility can no longer be met, the generator must comply with all applicable requirements for generators of listed wastes (including disposal of waste at a subtitle C facility) and owner/operators of treatment, storage, and disposal facilities under 40 CFR 262-270 (including renotification of hazardous waste management activity using EPA form 8700-12).

As with CBEC exemptions, the Agency is taking comment on whether generators claiming contingent management exemptions should be required to submit their sampling and analysis plans and analysis data to the Agency prior to the effective date of the exemption. The Agency is also asking for comment on whether re-testing and re-submittal of the notification and certification should be required more or less frequently than the schedule proposed today. The Agency is also requesting comment on whether re-testing and re-submittal of the notification is necessary at all.

##### **4. When Contingent Management Exemptions Become Effective**

The Agency is proposing that the conditional exemption for "contingent

management" wastes and media would not become effective until all three conditions of the exemption have been met: (1) notification and certification (similar to what would be required for first tier exemptions); (2) sampling and testing (as required for first tier exemptions); and (3) the waste or media is managed in accordance with the management standards established by this rule.

Prior to actual disposal, the waste would be managed as a hazardous waste according to all applicable RCRA provisions, including 40 CFR parts 262 (for generators) and 263 (for transporters). These requirements include compliance with the waste manifest provisions of 40 CFR part 262, subpart B, and the pre-transport provisions of 40 CFR part 262, subpart C, which contains, among other provisions, the provisions governing hazardous waste accumulation.

The Agency is proposing this approach to simplify implementation and to ensure safe management of the waste prior to satisfaction of the conditions for exemption. It is consistent with an approach under which a waste only ceases to be a hazardous waste if its ultimate disposal conforms to the requirements of this rule. It also decreases the potential implementation concerns that may arise if some states adopt this rule as part of their authorized programs and others do not. For example, this approach would reconcile transportation concerns that could arise if waste conditionally exempt in one state is transported through a state that has not adopted the contingent management exemption as part of its authorized program.

The Agency is taking comment on alternative approaches for when the exemption could become conditionally effective for contingent management exemption wastes. One alternative could be to have the conditional exemption become effective, for wastes or media being disposed of off-site, upon placement of the waste in a transportation vehicle that is designated to transport the waste to a facility eligible to handle contingent management exemption wastes. The Agency is taking comment on what pre-transport and transport requirements would be necessary to ensure that the waste or media is managed safely prior to disposal in the qualifying unit.

Under the above approach, contingent management exemption wastes or media being disposed of on-site would still not become exempt until placed in a disposal unit meeting the requirements established under this rule. Under the waste accumulation provisions of 40

CFR 262.34, a generator may store hazardous waste on-site in tanks or containers for 90 days without becoming a Subtitle C storage facility.

Comment is requested on whether, under the "placement in the vehicle" alternative or any other alternative that does not rely on the manifest system, the generator should have a responsibility to inform an off-site receiving facility of the nature of the waste, and whether the generator should also be required to maintain documentation demonstrating that the receiving facility had been informed of the nature of the waste.

Under an alternative that would not rely on the current manifest system, comment is requested on whether a generator should have to demonstrate that the contingent management exemption waste was actually received by the off-site destination facility and how that receipt could be demonstrated. EPA also seeks comment on mechanisms to inform EPA (or the authorized State) if a "contingent management" exemption waste does not actually arrive at its designated receiving facility. One approach might be to impose requirements similar to the 40 CFR 262.42 exception reporting provisions. The Agency seeks comment on this approach and other options for accomplishing the same goal.

Another alternative for satisfying the management requirement in the absence of a manifest could be to allow, in lieu of a tracking document, a demonstration kept in the facility's records of a contractual agreement with the receiving facility which specifies type of waste or media, volume, and frequency of deliveries. This document could also satisfy a requirement that a generator inform a receiving facility of the nature of the waste or media.

The Agency specifically requests comment on whether transportation companies transporting contingent management wastes from generators to disposal facilities would require generators to provide documentation and certification independently of federal regulation.

The Agency is taking comment on these and any other alternatives for when a contingent management exemption becomes effective. As with CBEC exemptions, the Agency is also taking comment on whether the Regional Administrator should have the authority to require additional analysis or to evaluate factors not considered in the exemption criteria, and what procedures he should use to do so.

##### 5. Duty of a Generator Claiming a Contingent Management Exemption to Manage Waste in Accordance With the Management Standards of the Exemption

Today's proposal requires that, in order to claim a contingent management exemption, a generator must manage the waste or media for which the exemption is claimed in accordance with the standards established by this rule. To satisfy this condition, the generator must ensure that the waste or media is actually disposed of at the facility designated in the notification as the receiving facility and in units satisfying the management standards under this rule. The burden of satisfying all conditions for the exemption falls on the generator as the person in the best position to determine eligibility of a waste or media for an exemption and to ensure informed waste management decisions. The generator is also in a position to enter into contractual arrangements with receiving facilities to allocate responsibility for satisfaction of the conditions among themselves. It should be noted, however, that facilities disposing of contingent management exemption wastes could become subtitle C treatment, storage and disposal facilities should they dispose of the wastes in units that do not comply with the management standards established for the exemption.

A contingent management exemption waste or media will be considered a hazardous waste until all of the conditions required for the exemption have been met. The generator will have the burden to demonstrate satisfaction of all of the conditions, including demonstrating that the waste or media actually was disposed of in a unit or units qualifying for management of contingent management exemption wastes.

Comment is requested on whether the condition that generators must manage second tier exemption waste or media in the manner set forth in the proposed rule is sufficient to put a generator on notice of his obligations and potential liabilities, and if not, what requirements or conditions would be necessary to accomplish that.

One alternative for how the rule could provide greater notice on how generators can comply with the contingent management exemption criteria would be to set out in the rule certain documentation that, while not necessarily required of generators, presumptively would be sufficient evidence of satisfaction of the management condition. Of course, EPA

could rebut this presumption regarding actual disposal through evidence that the generator's documentation is deficient or inaccurate. Generators might be able to develop rebuttable evidence of off-site disposal by having a returned manifest and documentation that the generator inquired as to the capability of a facility to dispose of second-tier candidate waste in accordance with the management standards and by having written documentation from the receiving facility with sufficient specificity to establish confirmation of its capacity to manage the waste in accordance with the exemption standards. For rebuttable evidence of actual on-site disposal, such documentation could consist of certifications by independent, qualified, registered professional engineers that units at the facility meet the management standard and operating logs indicating the identity of the waste, the date of generation, the volume generated, the manner of storage after generation, and date and volume disposed of in the qualifying management unit.

The Agency is taking comment on whether establishing certain evidentiary standards would provide useful guidance to generators on how to satisfy the management condition and provide helpful incentive for generators to maintain proper documentation of their exemption claims. Comment is also on whether the documentation discussed above, or other documentation, would be necessary or sufficient to accomplish the purpose of demonstrating compliance with the management condition.

Comment is also requested on whether any additional conditions or requirements, substantive or procedural, should be imposed on generators claiming a contingent management exemption to ensure that the contingent management exemption waste or media is actually managed in accordance with the management standards. Comment is further requested on whether, as opposed to the proposed approach, the regulation should provide that generators claiming a contingent management exemption are liable only if they have falsely certified or made an inaccurate waste determination or inappropriate selection of off-site facilities for disposal.

#### *E. Recordkeeping Requirements for ECHO, CBEC Exemptions and Contingent Management Exemptions*

Under the ECHO proposal, generators submitting notifications and certifications that certain wastestreams are no longer hazardous wastes under

subtitle C would be required to maintain copies of the notification and certification in their facility files for three years after Agency receipt of the notification and certification.

Generators claiming a CBEC or contingent management exemption would be required to maintain on-site, for at least three years after Agency receipt of the notification and certification, all documentation required under this rule including, but not limited to, the sampling and analysis plan and test data and the accompanying notification and certification.

The Agency requests comment on alternative record retention periods such as 5 years, which corresponds to the applicable statute of limitations period at 28 U.S.C. 2462. Owners and operators would be required to retain such documentation in their operating records until closure of the facility. The documentation must be available for review by the Agency or an authorized State at the time of site inspection. The three-year generator record retention period will be automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Regional Administrator.

#### *F. Compliance Monitoring and Enforcement for ECHO, CBEC Exemptions, and Contingent Management Exemptions*

If the ECHO approach is chosen, the Agency may choose to implement a stepped-up compliance monitoring program and enforcement program to oversee the transition to the new jurisdictional criteria. While ECHO would continue to provide generators with the flexibility currently embodied in the RCRA regulations for hazardous waste determinations, the Agency is concerned that expanding the hazardous waste characteristics could impose a significant new burden on enforcement resources. The Agency will be including the impact that ECHO may have on enforcement resources in its evaluation of this option.

The Agency may also choose to step up compliance monitoring and enforcement of the CBEC and contingent management exemptions, due to their self-implementing nature. The compliance monitoring and enforcement program outlined in this notice focuses on the CBEC and contingent management exemptions because these would be new requirements in the subtitle C system. The program is designed to ensure that the exemptions are being applied in an appropriate manner and that only those wastes and media that are truly nonhazardous are

relieved from subtitle C management requirements. Compliance monitoring and enforcement of the ECHO program would be carried out under existing authorities and conditions with which the regulated community should already be familiar.

Generators must comply with all of the previously described conditions of the exemptions to qualify for the exemptions. A generator must manage the waste or media as required under subtitle C during periods when any of those conditions are not met. Generators that fail to comply with the applicable conditions for a CBEC or contingent management exemption risk enforcement action for violations of subtitle C requirements, including administrative, civil and criminal penalties.

#### *1. Compliance Monitoring*

The Agency is proposing that compliance monitoring of the ECHO approach, the CBEC exemption, and the contingent management exemption occur through EPA or State oversight, primarily through review of notifications and inspections.

The primary means of oversight likely will be inspections. RCRA section 3007 requires that the Agency and States conduct inspections of TSDFs on a biennial basis. In addition, as a matter of policy, the Agency has increased the number of inspections directed at generators subject to land disposal restrictions requirements. Inspectors will review the notifications for completeness and use those notifications to assist in targeting facilities for inspection.

In addition, EPA and States may do confirmatory sampling and analysis to determine whether a waste or media meets the exemption levels. Inspections of off-site laboratories may also be performed.

#### *2. Enforcement*

The CBEC and contingent management exemption criteria proposed today would create two possible exits from the subtitle C system only so long as the conditions established for one or the other exit are met. Failure to comply with any of the conditions for the exemptions would mean that the wastes would not be exempt from subtitle C, and the generator could be subject to immediate enforcement action for violation of subtitle C requirements.

The Agency has the authority under this regulation or RCRA section 3007 to require submission of information on the management of exempted wastes or

media in a situation where the Agency suspects the generator has not satisfactorily determined whether a waste or contaminated materials meet the appropriate exemption levels. Alternatively, the Agency may require improved analysis using an administrative or civil action under section 3008(a). The Agency has the authority, under section 3007 of RCRA, to require submission of information and to conduct inspections of facilities which EPA has reason to believe may be managing a hazardous waste. Under this authority, the Agency would be able to inspect a non-subtitle C facility receiving contingent management exemption waste to determine whether or not the management standards were being met. Failure to manage the contingent management exemption waste in accordance with the required management standards would vitiate the exemption and the conditionally exempt waste would be subject to full subtitle C regulation. The receiving facility, therefore, would become a subtitle C treatment, storage, and/or disposal facility requiring a permit.

In an enforcement action, compliance with the terms and conditions of one of the exemptions may be raised as an affirmative defense, but the burden will be on the defendant to establish eligibility for the exemption and compliance with the conditions necessary to maintain the exemption. See 50 FR 642 (Jan. 4, 1985) for a discussion of EPA's authority to place such burdens on defendants.

Generators may not use either the CBEC or the contingent management exemptions as a means of avoiding enforcement actions. For example, a generator who is the subject of an Agency enforcement action cannot claim that the waste or media in question is exempted from subtitle C under a CBEC exemption unless a valid exemption notification for that waste or media has been previously submitted to the Agency and the required documentation to support the claim exists at the facility and satisfies the requirements of the regulations. Neither the CBEC nor the contingent management exemption can be used in a retroactive fashion to avoid enforcement actions. Similarly, these exemptions cannot be used as a legal defense prior to the effective date of promulgation of this rule.

#### *G. Exports of Wastes Eligible for CBEC or Contingent Management Exemptions*

Under today's proposal, contingent management exemption wastes would remain hazardous until actually disposed of in accordance with the

management conditions. The waste would thus remain subject to all applicable requirements of 40 CFR parts 262 and 263, including export requirements. Comment is requested on whether, if the point at which contingent management exemption wastes are no longer hazardous is changed to some point before actual management in accordance with the conditions, contingent management exemption wastes should still remain subject to the export requirements of 40 CFR part 262. Comment is requested on whether these export requirements are necessary to ensure that the contingent management exemption waste will be properly managed in the receiving country.

Under today's proposal, wastes qualifying for a CBEC exemption would not be subject to the export requirements of 40 CFR part 262. Comment is requested on whether exports requirements should be imposed on CBEC exemption wastes in order to ensure EPA's ability to comply with any current or future international obligations with regard to the export of hazardous and solid waste (for example, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal).

#### *H. Public Participation in CBEC or Contingent Management Exemptions*

To provide the public with access to information, the Agency is proposing that the first time a generator provides the Agency with notification of an exemption claim either for CBEC or contingent management wastes, he will be required to publish a notice of the exemption claim in a major local newspaper of general circulation. The notice should include the name and address of the facility, the description of the waste (as contained in the notification), the location at which further information on the exemption claim may be reviewed, and the period of time the information will be available at that location for review. The generator will be required to provide for public review copies of the notification submitted to the Agency, the sampling and analysis plan, and the testing data. The information can be made available to the public at a location or near the facility, and must remain available for sixty days after the date notification appeared in the local newspaper. The Agency requests comment on this proposed approach.

The Agency is also requesting comment on additional approaches to public participation. The current RCRA regulations do not require generators of hazardous waste to notify their community, rather these generators are

required to register with the Agency and to receive a RCRA identification number. Therefore, some parties have suggested that the Agency should not require any public participation. Conversely, other parties have suggested public participation requirements including a formal rulemaking in the *Federal Register* similar to the requirements of the delisting program. Although the Agency is proposing a mid-point between these two approaches, comment is requested on alternatives.

The Agency is taking comment on whether public notice should be required for resubmittals of the notification. The Agency is also taking comment on whether public access to the date should be required for the duration of the claim, and not just for a sixty day period or other limited time period. In addition, the Agency asks for comments on whether the public should have the right during the public review period (or during some specified time) to request a hearing on the claim, and what the implications of such a right be (such as delay or uncertainty in the exercise of an exemption, or substantial cost).

#### **XII. Other Changes to 40 CFR Part 261**

As a result of toxicity studies and subsequent health-based level development efforts associated with today's proposal, the Agency is proposing to add a number of constituents to appendix VIII of part 261. As noted below, many of these constituents are currently listed in 40 CFR 261.33 as commercial chemical products that typically exhibit a characteristic. The Agency has determined that these constituents are toxic and/or carcinogenic and has developed health-based levels for each of them based on available information. Therefore, the Agency believes that these compounds should be added to the list of hazardous constituents:

Acenaphthene  
 Acetaldehyde  
 (U001)  
 Acetone (U002)  
 Acrylic acid (U008)  
 Benzo(k)fluoranthene  
 Benzyl alcohol  
 n-Butyl alcohol  
 (U031)  
 Cumene (U055)  
 Dibromo-  
 chloromethane  
 Cyclohexanone  
 (U057)  
 Di-n-butyl phthalate  
 (U069)  
 Dimethylamine  
 (U092)  
 1,4-Dioxane (U108)  
 Ethyl acetate (U112)  
 Ethyl benzene  
 Ethyl ether (U117)  
 Furan (U124)  
 Isophorone  
 Methanol (U154)  
 Methyl isobutyl  
 ketone (U161)  
 Phenanthrene  
 Styrene  
 Vanadium (P119-  
 vanadic acid,  
 ammonium salt  
 and P120-  
 vanadium  
 pentoxide)  
 Xylene (U239)  
 Zinc

The Agency requests comments on these proposed modifications to part 261 of the CFR.

Certain of the constituents listed above, when used as solvents, are currently regulated by the F003 solvent listing. F003 is currently listed solely for ignitability. The Agency is considering the need to publish a separate rulemaking to modify the listing basis for F003 (as well as the U-listed commercial chemical products listed above) to also include toxicity. The Agency requests comment of the need for this change.

### XIII. Relationship to Other RCRA Regulatory Programs

Today's proposed exemption levels, when promulgated, will define where RCRA subtitle C jurisdiction ceases and, under ECHO, where it begins. As discussed below, these levels also may affect a number of RCRA regulatory programs such as delisting (40 CFR 260.22), land disposal restrictions (40 CFR part 268), closure (40 CFR part 264 subpart G), and corrective action (40 CFR part 264 subparts F, and S, when promulgated). The lower tier exemption levels, discussed under the contingent management approach, may represent a base-line level of concern for listed wastes, providing a unified basis for RCRA programs, such as closure and corrective action, which also regulate and remediate dilute wastes and contaminated media.

The CBEC approach proposed today would be promulgated only in the context of a listing exemption process and represent the conservative levels necessary for broad (*i.e.*, waste-specific) exemptions. However, permit writers reviewing and writing closure and corrective action plans may consider waste- or site-specific factors (*e.g.*, site hydrogeology, immobility) and specific statutory mandates to set clean-up levels for specific constituents that differ from the exemption levels. Higher levels also may pose minimal risk to human health and the environment.

#### A. Characteristics of a Hazardous Waste

The CBEC approach will establish exemption concentrations for 200 hazardous constituents in eligible listed waste or media or material containing those listed wastes. If the concentration of each of these hazardous constituents is below a baseline exemption level, the waste would not be considered the listed hazardous waste. However, the generator must still determine whether the waste exhibits any characteristics of a hazardous waste as specified in 40 CFR 261.21 through 261.24.

The ECHO approach will modify the existing toxicity characteristics (TC) by broadening the number of constituents included in the characteristic. Ultimately, constituent specific DAFs will be developed all TC constituents. Eventually, this approach would largely replace the current approach to hazardous wastes identification based on a combination of waste listings and the mixture and derived-from rules.

#### B. Requirements for Treatment, Storage, and Disposal Facilities and Interim Status Facilities

In order to implement the changes proposed today, changes may be needed in TSD waste analysis plans. Such changes will most likely include the addition of the appropriate analysis methods and changes that may be required in the frequency of testing.

Permitted facilities, in unauthorized States, who elect to employ the exemption procedures and who subsequently prepare changes to their waste analysis plans should, following promulgation of this rule, submit a Class I permit modification to EPA.

#### C. Hazardous Waste Listings

The Agency evaluated the likelihood that untreated hazardous wastes would be able to meet the exemption criteria in an "pure" state (*e.g.*, untreated and unmixed) and determined that it is extremely unlikely that the constituent

concentrations in *untreated* hazardous wastes would be below the BDAT standards or today's proposed exemption levels. Specifically, the Agency's hazardous waste characterization data indicate that the concentrations of toxicants of concern in untreated listed wastes are typically present at levels many times higher than the BDAT and health-based levels. Thus, if the final rule is based on levels of 100 times health-based numbers or less and if eligibility is limited to certain wastes known to be highly toxic through other pathways, but highly immobile in an aqueous leaching medium, such as dioxins, then this rulemaking will not imply significant change in how the Agency does future waste listings. However, if the levels are significantly higher it could have a major effect on future listings.

#### D. Delisting

Delisting is a rulemaking process where the Agency reviews and evaluates specific requests for regulatory relief. Specifically, a petitioner submits a demonstration which supports the petitioner's claim that a specific listed hazardous waste does not meet the criteria for which it was listed, and that the waste is not hazardous for any other reason. If the Agency agrees with the petitioner that the petitioned waste is not hazardous, EPA publishes a proposed exclusion in the *Federal Register* and solicits public comment prior to the publication of a final exclusion. The Agency's evaluation considers the mobility of the specific constituents of concern for each petitioned waste. The basic aspects of determining the levels requiring no regulation under subtitle C in delisting and today's proposed exemptions are the same. Both programs generally use the same health-based data for comparison at the hypothetical compliance (exposure) point. Facilities must conduct similar levels of waste characterization for both programs particularly with respect to the number of samples required). The purpose of today's proposed rule is to establish a self-implementing, generic rule where the facility, rather than EPA, determines whether a listed waste must continue to be managed as a subtitle C hazardous waste.

Today's proposed exemption and delisting criteria differ in the multiplier used. In delisting, the Agency typically predicts the concentration of specific constituents at a compliance point (such as a drinking water well) to determine if the waste is likely to pose a threat to human health and the environment. This



## ATTACHMENT 39

### Identification and Listing of Hazardous Waste

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prediction incorporates fate and transport modeling which accounts for some degree of dilution and attenuation due to toxicant migration to the exposure point. The CBEC contingent management proposal in today's notice would account for dilution or attenuation ten to one hundred times greater than the health-based numbers; the multiplier of ten is less than the most conservative value used in delisting evaluations and the multiplier of one hundred is greater than any delistings granted to date. However, in delisting evaluations, in addition to predicting hypothetical compliance-point concentrations, the Agency also evaluates existing ground-water monitoring data, where applicable. These data allow the Agency to evaluate the actual impact of the waste on the environment as currently managed. (Monitoring data are evaluated only for wastes that are managed in on-site or dedicated off-site land disposal units.)

Delisting and today's proposed exemptions for certain wastes will differ in analytical requirements. Delisting demonstrations require that the petitioner analyze the waste for those hazardous constituents that are reasonably expected to be present in the waste, with Agency oversight to ensure that the reduced list of analytes for delisting is truly representative of the petitioned waste. Today's proposed exemption demonstrations require analysis for *all* of the exemption constituents for the initial testing because there is no oversight provided by the Agency to ensure that the proper subset of constituents is examined. The Agency is soliciting comments on means of reducing testing requirements once the initial demonstration is made successfully. Thus, the delisting demonstration provides a means to narrow the necessary initial sampling to fewer contaminants than is proposed for today's exemption.

As mentioned above, the delisting exemption process is a rule-making activity that requires that the Agency propose each decision, solicit and consider public comments on each proposal, and publish all final decisions. Final exclusions are then listed in 40 CFR part 261, appendix IX.

Delisting petitions for wastes that contain toxic constituents which exceed the exemption levels will continue to be accepted and reviewed by the Agency. In addition, the Agency will accept petitions for wastes which are ineligible for today's proposed exemption because of analytical constraints. With the exception of a potentially reduced

petition review burden, the Agency does not anticipate any changes in the current review of delisting petitions as a result of the implementation of today's proposed exemption.

#### *E. Closure*

Under today's proposed rule, a unit managing wastes that are shown to be below exemption levels would continue to be a regulated hazardous waste management unit subject to the requirements of parts 264 and 265, including the closure requirements until it completed clean closure or unless the waste and unit were delisted. A unit receiving only waste that is shown to be below exemption levels would no longer be receiving hazardous waste upon the effective date of the certification. Such a unit would thus normally become subject to subtitle C closure requirements; however, EPA believes that "closure" requirements could allow such units to continue to operate as nonhazardous units.

In cases where a unit receipt of hazardous waste due to certified compliance with the exemption, the closure requirements of 40 CFR 264.113(b) and 265.113(b), which require an owner or operator to complete closure of a hazardous waste management unit within 160 days after receiving the final volume of hazardous waste, would require closure of the unit. Thus, the owner or operator would have to close the unit in order to continue operation, including receipt of the exempt waste. The Agency believes that, in many cases, hazardous waste management units that continue to receive only exempt wastes would be able to satisfy the closure requirements of parts 264 and 265 while operating the unit and without removing the waste from the unit. However, in the case of surface impoundments, clean closure of the unit would be required. Where this is not possible, filing of the certification would trigger the requirement to close with waste in place, thus require the unit to cease operation or to follow the delay-of-closure alternative of § 264.113 or 265.113.

In the case of tanks, 40 CFR 264.197 and 265.197 require the owner or operator to remove or decontaminate all waste residues, contaminated containment system components, contaminated soils, and structures and equipment in order to achieve clean closure of the tank unit. Under today's proposal, an owner or operator might demonstrate removal of hazardous waste residues from the tank by demonstrating that all waste in the tank is below exemption levels, without removing the waste from the tank. In

cases where the owner or operator could not demonstrate that all wastes in the tank were below exemption levels, he or she would have to remove the hazardous waste in order to achieve closure of the unit. In some cases, the facility owner or operator may be able to demonstrate that a tank no longer managed hazardous waste (because the waste was below exemption levels), but did not achieve clean closure because of soil and perhaps groundwater contamination. In this case, the facility owner or operator would have to remove the contamination to clean closure levels, or close the area as a landfill. During this period, the tank could be used to manage nonhazardous wastes, as long as this activity did not interfere with cleanup or control of the contaminated areas.

In the case of surface impoundments, if the owner or operator can demonstrate that the wastes in the impoundment are below exemption levels, then the owner or operator may be able to achieve clean closure of the unit without removing the wastes from the impoundment, providing that the requirements of 40 CFR 264.228 or 265.228 and the general closure requirements of part 264 or 265 Subpart G are met. In this case, use of the unit could continue uninterrupted. In many cases, however, it is likely that the owner or operator will be unable to make that demonstration. In these cases, the facility owners would have two options if they wished to continue using their units: (1) they could cease receiving waste and close the unit by removal in accordance with part 264 or 265, or (2) they could seek to delay closure under the provisions of 40 CFR 264.113 (d) and (e) or 40 CFR 265 (d) and (e). In cases where clean closure of the unit cannot be achieved, and the owner or operator cannot satisfy the requirements of 40 CFR 264.113 (d) and (e) and 265.113 (d) and (e) to delay closure, filing the CBEC certification would trigger the closure requirements and the owner or operator would have to close the unit as a landfill and stop operation of the unit.

#### *F. Subtitle C Corrective Action*

Today's proposed rule, when promulgated, may have an impact on the implementation of RCRA subtitle C Corrective Actions for regulated units under 40 CFR part 264 subpart F and for solid waste management units under § 3004(u). As proposed, CBEC tier 1 levels are the lowest levels of regulatory concern and thus will become presumptive cleanup levels for corrective action and clean closure. The

Agency has used identical health-based levels to develop the exemption levels and the "action levels" proposed on July 27, 1990 (see 55 FR 30798) as part of the RCRA corrective action program. Actual clean-up levels, however, may differ from both the action levels and exemption levels due to the consideration of waste- and site-specific factors, and other data gathered during the investigatory and evaluative phases of the corrective action process (e. g., the RCRA Facility Investigation and the Corrective Measures Study).

#### G. Land Disposal Restriction Program

An important factor in determining the impact of today's proposal is the relationship between the CBEC and ECHO levels proposed today and the RCRA land disposal restriction standards.

Section 3004(m) of RCRA requires that hazardous wastes be treated to a level at which "short-term and long-term threats to human health or the environment are minimized" prior to land disposal. In the "Third Third" land disposal restriction rulemaking, 55 FR 22520 (June 1, 1990), the Agency explained in detail its interpretation that the statute leaves to EPA the determination of whether the LDR treatment standards attach at the point of waste generation or at the point of disposal. *Id.* at 22651-22653.

In the Third rule, EPA explained why the Agency believed that the point of generation approach would generally better meet the goals and purposes of the LDR program than a point of disposal approach. *Id.* at 22652. However, EPA also explained that the point of disposal approach is appropriate in certain circumstances, such as when applying LDRs at the point of generation would seriously disrupt the implementation of other environmental regulatory programs. *Id.* at 22653. One of the policy rationales for exercising its discretion under the statute to generally require full BDAT treatment for wastes that are hazardous at the point of generation was the inadequacy of existing hazardous waste identification programs; specifically wastes identified as hazardous for a particular characteristic might still be toxic, due to the presence of non-TC constituents, even when that characteristic is removed. *See id.* at 22652. Such waste thus would not meet the Section 3004-(m) "minimize threat" land disposal standard even after it is no longer "hazardous".

The decision concerning which LDR approach to utilize with respect to the low hazard waste subject to today's proposal may significantly affect the

practical impact of the options proposed today. For example, a waste which is hazardous when generated but treated to CBEC or ECHO levels may still, under a point of generation approach, require treatment to any more stringent LDR level prior to land disposal. Thus, many CBEC or ECHO wastes may require LDR treatment prior to disposal in a Subtitle D unit.

However, to the extent that the CBEC or ECHO proposal here provide a more comprehensive way of determining the hazards presented by hazardous wastes, requiring treatment beyond the levels at which a waste is hazardous may no longer be necessary to "minimize threats." For that reason, EPA is taking comment on some aspects of adopting the point of disposal as the point at which LDR standards attach as one alternative way of addressing the interaction between the CBEC and ECHO approaches proposed today and the RCRA land disposal restrictions. For example, the Agency is considering this alternative in addressing the problems raised by the cleanup of contaminated media (see further discussion in Section III E.) In addition, under the ECHO approach, EPA is requesting comment on this alternative for addressing the issues raised by the land disposal restrictions' relationship to characteristic wastes. EPA requests comment on this issue.

Section 3004(m) of RCRA provides that treatment standards for hazardous waste prior to land disposal cannot be below levels at which "short-term and long-term threats to human health and the environment are minimized." See also *HWTC v. EPA (HWTC III)*, 886 F.2d 355, 362 (D.C. Cir. 1989), *cert. denied* 111 S.Ct. 139 (1990). To date, the Agency has been unable to define risk-based levels which meet the Section 3004(m) standard. See 55 Fed. Reg. 6640 (February 26, 1990). EPA expects to address the issue of the relationship between the BDAT standards and the Section 3004(m) "minimize threat" standard in more detail in the upcoming LDR "phase two" proposal, to be published this summer. However, EPA also recognizes that the levels proposed in this rule may also be related to the "minimize threat" standard. If the CBEC or ECHO levels are also the "minimize threat" standard, then wastes that are treated to levels below the exemption level would also have met their obligation under the LDR program and could accordingly be land disposed without treatment. The Agency asks for comment on whether the levels proposed in this rule should be the "minimize threat" level that bounds the LDR treatment standards.

#### H. RCRA Emission Standards

Today's proposed rule, when promulgated, may have an impact on the effectiveness of two other RCRA rules developed by the Agency under HSWA authority. Section 3004(n) of HSWA directed the Agency to promulgate regulations controlling air emissions from hazardous waste TSDFs "as necessary to protect human health and the environment." Subsequent Agency analysis demonstrated that air emissions from TSDFs do pose substantial risk in the absence of controls, and that controls were therefore required under the HSWA mandate. The Agency is fulfilling this mandate in phases; a rule was promulgated in 1990 covering certain sources at TSDFs (55 FR 25454, June 21, 1990), and the remaining sources were addressed in a second rule proposed in 1991 (56 FR 33490, July 22, 1991). Together, these rules would reduce the risk from air emissions from the vast majority of these facilities to well within the risk range of other RCRA standards. After more thorough analysis, the Agency may issue a third phase of these regulations to address any residual risk. The emission reductions achieved by these rules would also significantly reduce the formation of ozone, which has adverse effects on human health and the environment.

Today's rule could affect the TSDF air emissions regulations in the following way. The TSDF rules were designed to prevent volatilization of hazardous organics as they move through storage and treatment, keeping the organics in the waste until it ultimately undergoes BDAT treatment, which is assumed to remove any significant risk from exposure via the air medium. If, under any of the exemptions proposed today, waste leaves the system without BDAT treatment, that waste must be assumed to pose a potential air risk until further analysis shows otherwise. If significant risk exists, it may be necessary to develop air-based exemption criteria to supplement those suggested in today's proposal. Such criteria could entail additional waste testing. The Agency specifically requests comment on this issue, and on ways to address it.

#### XIV. CERCLA Program

All listed hazardous wastes are listed as hazardous substances under section 101(14)(C) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended. Under section 103(a) of CERCLA, notification must be made to the Federal government

of a release of any CERCLA hazardous substance in an amount equal to or greater than the reportable quantity (RQ) assigned to that substance within a 24 hour period. (See 40 CFR part 302 for a list of CERCLA hazardous substances and their RQs.) Once a specific waste from a particular facility has been shown to meet the exemption criterion in this rule, the waste is no longer a listed hazardous waste and therefore no longer a hazardous substance by virtue of its hazardous waste listing, and thus notification under CERCLA of a release of the exempted waste may not be necessary. In this situation, CERCLA notification of releases of the waste would only be required if the waste or any of the constituents of the waste are CERCLA hazardous substances by virtue of section 101(14)(A), (B), (D), (E), or (F) of CERCLA or 40 CFR 302.4(b), and are released in amounts greater than or equal to their RQs. The Agency requests comment on this approach.

The Agency believes that exemption levels also may be applicable to the CERCLA program where it has been documented that RCRA listed hazardous waste has been disposed of at the site. Section 121(d) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, requires that CERCLA actions comply with, or justify a waiver of, applicable or relevant and appropriate requirements (ARARs) under federal and state environmental laws. When RCRA requirements are identified as ARARs at CERCLA sites because of the presence of RCRA listed hazardous wastes at the site, the Agency believes that the CBEC/ECHO exemption levels will become the preliminary remediation goals for listed wastes, depending on site-specific factors and other criteria specific to the CERCLA program. In addition, all of the options would determine the legal applicability of federal RCRA managements requirements to remediation wastes generated at Superfund sites.

At sites undergoing CERCLA remedial activities where no listed hazardous wastes have been identified, the Agency will generally use a site-specific risk assessment for all chemicals for which there are no ARARs. In some cases, these health-based clean-up levels will be higher than the exemption levels, based on a reasonably conservative exposure scenario which does not include leachate ingestion. In other cases, the CERCLA health-based clean-up levels will be lower than exemption levels when additive effects are considered or when specialized analytical techniques are required in

order to lower quantitation limits. The CERCLA health-based clean-up levels may also be different than exemption levels based on the consideration of site-specific factors.

#### XV. State Authority

##### *A. Applicability of Rules in Authorized States*

Under Section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. (See 40 CFR part 271 for the standards and requirements for authorization.) Following authorization, EPA retains enforcement authority under sections 3008, 7003, and 3013 of RCRA, although authorized States have primary enforcement responsibility.

Prior to the Hazardous and Solid Waste Amendments (HSWA) of 1984, a State with final authorization administered its hazardous waste program entirely in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State and EPA could not issue permits for any facility in the State that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under section 3006(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by the HSWA take effect in authorized States at the same time that they take effect in non-authorized States. EPA is directed to implement HSWA requirements and prohibitions in an authorized State, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, HSWA applies in authorized States in the interim.

##### *B. Effect of State Authorizations*

Today's proposal, if finalized, will promulgate regulations that are not effective under HSWA in authorized States. Thus, the exemption will be applicable only in those States that do not have final authorization.

Authorized States are only required to modify their programs when EPA promulgates Federal regulations that are more stringent or broader in scope than the authorized State regulations. For those changes that are less stringent or reduce the scope of the Federal program,

States are not required to modify their programs. This is a result of section 3009 of RCRA, which allows States to impose more stringent regulations than the Federal program. Today's proposal for CBEC exemptions is considered to be less stringent than, or a reduction in the scope of, the existing Federal regulations because that portion of today's proposal would exempt certain activities now within the purview of RCRA subtitle C. Therefore, authorized States are not required to modify their programs to adopt regulations consistent with and equivalent to the CBEC rulemaking. However, to the extent that the ECHO option brings new wastes into hazardous waste regulation; those aspects of this rulemaking would, if finalized, need to be adopted by authorized States.

Even though States are not required to adopt most options in today's HWIR proposal, EPA strongly encourages States to do so as quickly as possible. As already explained in this preamble, today's proposal will reduce over-regulation of dilute wastes and contaminated media, will facilitate evaluating remediation alternatives for CERCLA clean-ups and the RCRA Corrective Action Program, will provide an alternative to delisting, and will speed research and development for treatment alternatives to land disposal and waste minimization, recycling, and reuse. States are therefore urged to consider the adoption of all aspects of today's HWIR proposal (when promulgated); EPA will expedite review of authorized State program revision applications.

States that submit official applications for final authorization less than 12 months after the effective date of these regulations are not required to include standards equivalent to these regulations in their application. However, the State must modify its program by the deadline set forth in § 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these regulations must include standards equivalent to these regulations in their application. The requirements a state must meet when submitting its final authorization application are set forth in 40 CFR 271.3.

#### XVI. Economic Assessment

##### *A. Background*

The Agency has conducted a preliminary economic assessment (EA) in conjunction with the development of today's proposed rule. This analysis quantifies cost savings potentially

associated with the four primary options presented under both prospective of this proposal. These are: the health based approach, the technology approach, the contingent management approach, and the Expanded Characteristic Option (ECHO).

The analysis conducted for this Notice of Proposed Rulemaking is to be considered preliminary. A comprehensive final Regulatory Impact Analysis (RIA) will be developed in conjunction with the Final Rule. This RIA will be consistent with procedures described in appendix V of the Regulatory Program of the United States Government.

Results from the Agency's preliminary analysis indicate that the proposed rule would not cause major increases in prices or costs or have other significant adverse effects. EPA expects that the proposed regulations, as part of the Agency's RCRA reform initiative, could reduce costs to the economy in excess of \$100 million per year, particularly hazardous waste storage, treatment, and/or disposal costs.

The complete Economic Assessment document, Preliminary Economic Assessment of the Hazardous Waste Identification Rule, is available in the docket established for this proposed rule. The following is a summary of the methodology used in performing the EA and the results of the analysis.

#### *B. Potentially Affected Wastes*

The proposed rulemaking would affect two broad categories of wastes, listed hazardous wastes and media contaminated with listed hazardous waste. Listed hazardous wastes are deemed hazardous by virtue of being listed by the Agency. Contaminated media commonly refers to all soil, debris and other materials which have been contaminated with a listed waste.

Two primary categories of listed hazardous wastes will be affected by this rule, wastes as generated and residuals. Wastes as generated refer to the composition of wastes as they are originally released, prior to any treatment. Residuals refer to any residue which may remain after BDAT treatments as identified under the LDR program. In the category of contaminated media, this analysis focus only on contaminated soils.

The EA estimates the proposed rule's cost savings separately for waste and media because different data sources and slightly different regulatory options apply to wastes and media.

#### *1. Process Waste*

The population of hazardous wastes potentially affected by today's proposal was estimated using data from EPA's 1986 National Survey of Hazardous Waste Generators. This Survey was used because it was the only readily available comprehensive data source found to link volume estimates to constituent concentrations, by waste stream. The Agency recognizes the limitations and problems potentially associated with the use of a single data source that is more than five years old. The Agency plans to compare, adjust and update these data combining information supplied in comments and various alternative data sources, throughout development of the final rule making process.

The 1986 Survey indicates that approximately 718 million tons of RCRA hazardous waste were generated in 1986. As much as 60 percent of this total may be managed exclusively under the Clean Water Act. Of the total, approximately 344 million tons are ineligible for potential exemption because they are characteristic wastes and, if treated such that the characteristic is removed, would be unregulated, thus unaffected. Another 224 million tons are hazardous wastes that are both characteristic and listed. They may be eligible, if the characteristic is removed. The remaining 150 million tons are listed wastes, which are also eligible under this proposal. Six of the 150 million tons were excluded from analysis, however, because they are either discharged without treatment to publicly owned treatment works (POTWs) or waterways, and therefore unlikely to generate savings, or are contaminated soil, which is addressed separately. Of the remaining 144 million tons of listed wastes, 120 million tons are wastewaters and 24 million tons are non-wastewaters.

The Agency determined which of the eligible hazardous wastes would be exempt under alternative regulatory options by using three types of data inputs. (1) Waste concentration data were identified from the 1986 Generator Survey for individual listed waste streams. These streams constituted 84 percent of the listed wastewater volumes and about 13 percent of listed non-wastewater volumes. The results for these waste streams were extrapolated to estimate the impacts on listed waste streams for which constituent concentration data were not available and on wastes that are

initially both listed and characteristic wastes. (2) This analysis used the health-based levels (e.g., MCLs, RfDs, and RSDs), and criteria discussed in section VI of the Preamble to determine the volumes of waste affected under the corresponding regulatory options. (3) Information from the land disposal restrictions program was used to determine proposal standards under options based on BDATs, to identify the treatment methods that would be required for wastes remaining subject to subtitle C regulation, and to determine the contaminant concentrations achievable by available treatment technologies.

#### *2. Contaminated Media*

The universe of contaminated media potentially affected by this proposed rule includes contaminated soil and contaminated ground water. This analysis focuses on contaminated soil only. Contaminated ground water is not analyzed for two reasons. First, data characterizing the volume of contaminated ground water are incomplete and contain a great deal of uncertainty. Second, the cost savings for ground water are likely to be relatively small. Contaminated ground water is often managed under Clean Water Act provisions by being discharged to POTWs or under National Pollutant Discharge Elimination System permits and therefore may not be significantly affected by this proposal.

Contaminated media subject to subtitle C are normally generated by remediation activities. For this analysis, the Agency focuses on five sources of contaminated media: CERCLA (Superfund) actions, RCRA corrective actions, RCRA closures, state Superfund cleanups, and voluntary cleanups.

For each of these sources of contaminated media, upper- and lower-bound estimates are developed for (1) the number of sites with contaminated soil; (2) the quantity of contaminated soil to be excavated at these sites; and (3) the pace of excavation. A range of estimates is used because of the substantial uncertainty associated with contaminated soil generation rates. Based on this approach, it is determined that approximately 3 to 11 million tons of contaminated soil will be generated per year.

Contaminated soil may be affected by this proposal if, (1) it is contaminated with listed wastes and (2) constituents in the soil are below applicable

concentration levels, as identified in the various options. The proportion of excavated soil that contains only listed wastes was estimated using data submitted to EPA by three hazardous waste landfills in 1990 and 1991. These data suggest that from 28 to 61 percent of contaminated soil subject to regulation as hazardous waste, contains listed waste. This estimate, however, is highly uncertain because of the difficulties of identifying listed waste in soil. The portion of contaminated soil with constituents below proposed levels (i.e., exempt from subtitle C) was generally estimated by using data from Superfund Records of Decision from 1988 and 1989 on the constituent concentration and volume of soil at CERCLA sites.

### C. Estimated Cost Savings

By exempting wastes from regulation, the proposed rule would generate cost savings from the point of hazardous waste generation to disposal. Volumes exempted and cost savings are projected for wastes as generated, mixed and derived from wastes and treatment residuals. This analysis focuses on the most significant cost savings: treatment and disposal cost savings for wastes, and treatment cost savings for contaminated media (soils). Thus, the estimated cost savings depend on the volume of waste and media exempted, the treatment or disposal avoided, and the unit savings for different treatment and disposal methods.

Hazardous wastes may incur treatment and/or disposal cost savings. In general, the estimated savings are equal to the cost of treatment and disposal of residues under subtitle C minus the cost of disposing of the exempted waste in a subtitle D landfill. Second, if a hazardous waste meets BDAT and proposed concentration standards (e.g., BDAT treatment residues), the only savings will be lower disposal costs. These savings will equal the difference between subtitle C and D disposal costs.

The primary costs savings for contaminated soils will be avoided treatment costs. Disposal savings do not arise because contaminated media exiting subtitle C is assumed not to be subject to subtitle D because media are not solid wastes.

For each regulatory approach, the following discussion presents the Agency's estimates of the volume of wastes as generated, residuals, and contaminated media exempted from subtitle C and the associated costs savings.

#### 1. Health-Based Approach

This option would establish

exemption criteria by combining health-based levels and multipliers (DAFs). It combines constituent concentration levels that minimize threats to human health (based on conservative estimates of human responses to contaminants) with multipliers reflecting reasonable worst-case management scenarios for exempted wastes. Under this option, the Agency would use health-based levels equivalent to proposed or final MCLs established under the Safe Drinking Water Act, RfDs for non-carcinogens, and RSDs for carcinogens. Additionally, exemption criteria for contaminated media could be based on direct exposure using soil ingestion and inhalation scenarios for residential settings. For a complete discussion of health based levels used in this section see chapter VI of the proposed rule preamble.

Volumes of processed waste and contaminated media affected by this rule each year, and the associated cost savings, are shown in Exhibit 1. All results are presented as ranges to reflect the substantial uncertainty in these estimates, including the concentration of hazardous constituents in potentially eligible process wastes and the volumes of contaminated soil generated annually. Furthermore, the wide range of estimates also reflects the differences among the health-based sub-options (i.e., multiplier of 1, multiplier of 10, or a multiplier of 100 and, for contaminated media, the direct exposure).

The health-based option would exempt from just over 6, to nearly 84 million tons of wastes and contaminated media from subtitle C regulation annually. The largest portion of the volume exempted is residuals from BDAT treatment of process wastes (6 to 50 million tons). Total cost savings for the health-based option range from approximately \$62 to \$1,820 million per year. The largest savings result from exemption of contaminated media, because of the high treatment costs.

Different regulatory options and sub-options for process wastes (i.e., wastes as generated and residuals) and contaminated media may be advantageous. Thus, in the EA, the Agency presents separate estimates for each sub-option for process wastes and contaminated media. For process wastes, the greatest savings could be achieved with a sub-option multiplier of 100, from \$296 to \$364 million per year. For contaminated media, the multiplier of 100 sub-option produces cost savings of \$400 to nearly \$1,500 million annually. Cost savings for other sub-options and combinations are presented in the EA.

EXHIBIT 1.—HEALTH-BASED APPROACH  
PROCESS WASTE & CONTAMINATED  
MEDIA

	Affected volumes (million tons/year)	Cost savings (million \$/yr)
Wastes eligible before treatment.....	<1 to 32	46 to 264
Residuals from other wastes.....	6 to 50	4 to 80
Contaminated media.....	<1 to 2	12 to 1,456
Totals.....	6 to 84	62 to 1,820

#### 2. Expanded Characteristic Option (ECHO)

The expanded characteristic option (ECHO), is evaluated in this section. This scenario estimates the potential volumes exempted and corresponding cost savings associated with expanding the current list of characteristics to include all currently listed constituents. As is the case with wastes now defined as hazardous by a characteristic, wastes would be exempt from subtitle C once treated to remove the characteristic. Those wastes for which the listing is not replaced by the expanded characteristics would still be listed and subject to the mixture and derived from rules. This option may also include landfill design specifications and associated meteorological and geological conditions.

The impact of this option on process wastes was developed by using the results of the health-based option with a multiplier of 100. The Agency, however, recognizes that under this option, constituent specific multipliers may be higher or lower than 100 for specific constituents. This option may significantly increase the total number of constituents managed under subtitle C. Ultimately, it may also significantly decrease the volume of waste regulated under subtitle C, depending on the levels selected for DAF multipliers.

Based on the above assumptions, the total volume of process waste and residuals projected to be exempt under this option is estimated to range from about 68 to 84 million tons. The total cost savings is likely to be higher than the \$296 to \$364 million under the multiplier of 100 option. This may result from less rigorous testing requirements (based on current TC testing requirements).

The total volumes of contaminated media affected by this approach range from about one-half to nearly 2 million tons per year, for an annual cost savings of \$397 to \$1,456 million. These large



ranges reflect major uncertainties in the amount of contaminated soil generated annually and the actual extent to which the toxicity characteristic is expanded (i.e., the portion of contaminated soil below proposed levels).

The above savings may be overstated since some non-hazardous waste may be brought into subtitle C when the characteristics are expanded. Depending on the ultimate DAFs set for specific constituents, these savings are also potentially understated.

**EXHIBIT 2.—CHARACTERISTIC MANAGEMENT APPROACH PROCESS WASTE & CONTAMINATED MEDIA**

	Affected volumes (million tons/year)	Cost savings (million \$/yr)
Wastes eligible before treatment.....	18 to 32	216 to 264
Residuals from other wastes.....	50	80
Contaminated media.....	0.4 to 2	397 to 1,456
Totals.....	68.4 to 84	693 to 1,820

### 3. Technology-Based Approach

Under this option, exemption levels would be based on the performance of the best available waste treatment. This option mirrors the approach taken in the subtitle C Land Disposal Restrictions program, which establishes standards based on the best demonstrated available technology (BDAT). Although BDAT levels are generally below health-based levels, they may in a few cases be higher than acceptable health-based levels. For this reason, the technology-based option may be combined with health-based criteria to ensure that if wastes continue to pose hazards at the BDAT levels they would not be exempted.

Volumes of wastes as generated, residues, and contaminated media exempted by the technology-based alternative are presented in Exhibit 3, along with cost savings on treatment and disposal. The total volume of waste exempted may range from nearly 55 to 65 million tons per year, with a total cost savings ranging from approximately \$203 to \$250 million per year.

The Agency assumes that no contaminated media will be exempt from subtitle C regulation under the technology-based approach. This is because we assume in the baseline of this analysis that contaminated soils

(the only media studied in this EA) will be treated to BDAT levels when they are excavated, pursuant to the LDR program. This analysis assumes that all contaminated soils are excavated and are then treated to BDAT levels and subsequently exit subtitle C. However, a portion of soils may not exit subtitle C either because they are not treated or because treatment does not reach BDAT levels. The cost savings that could result from exempting some of these soils has not been quantified.

Under the technology-based approach the greatest share of cost savings results from exemption of waste residuals (Exhibit 3). This is estimated at approximately 52 million tons per year, with a corresponding cost savings of approximately \$140 million annually.

**EXHIBIT 3.—TECHNOLOGY BASED APPROACH PROCESS WASTE & CONTAMINATED MEDIA**

	Affected volumes (million tons/year)	Cost savings (million \$/yr)
Wastes eligible before treatment.....	3 to 13	63 to 119
Residuals from other wastes.....	52	140
Contaminated media.....	0	0
Totals.....	55 to 65	203 to 259

### 4. Contingent Management Approach

The contingent management approach employs different management requirements depending on the waste constituent concentration. Most contaminated wastes and media would be regulated under existing subtitle C requirements. Wastes with low levels of contamination would be regulated under RCRA subtitle D, while media with low levels of contamination would be exempt from subtitle D as well as subtitle C requirements. Wastes and media with intermediate levels of contamination would receive management appropriate to those levels.

Exhibit 4 shows the volumes of process wastes and contaminated media exempted under the contingent management approach and the resulting cost savings. Uncertainty in the total volumes of contaminated media are reflected in upper and lower values for these estimates. The upper and lower estimates also reflect the concentration of hazardous constituents in process wastes and the sub-options for

managing soils in the intermediate range of contamination created by the contingent management approach.

Total volumes of process wastes and contaminated media affected range from about 9 to 60 million tons per year. Of this, the greatest volume is for process waste, accounting for approximately 59 million tons per year eligible under the contingent range. The greatest contributor to total cost savings is contaminated media at a multiplier of less than 10, which would produce savings ranging from \$358 to \$1,314 million per year.

Under the contingent management approach, process wastes and contaminated media affected by the rule would either be entirely exempt from subtitle C regulation or would be subject to less stringent management requirements depending on their levels of contamination. Process wastes in the intermediate range of contamination could either receive full subtitle C management (in which case there would be no change from the status quo and no cost saving), or be placed in a subtitle D landfill. The cost savings achieved if all process wastes are placed in a landfill meeting default requirements for municipal solid wastes may total \$228 to \$233 million per year. Actual cost savings within this contingent category, however, are likely to be less, depending upon specific management requirements.

Contaminated soils in the intermediate range of contamination could receive one management choice that does not apply to process wastes. Contaminated soils could be capped in-place to meet subtitle D requirements. As with process wastes, there are no cost savings for contaminated media that continue to receive subtitle C management. However, if all contaminated media currently failing within the intermediate range (HBN\*10-HBN\*100) of contamination were placed in a subtitle D landfill, cost savings would range from \$35 to \$129 million per year (see EA). If all contaminated soils were capped in-place, the cost savings would be slightly larger, amounting to \$38 to \$139 million per year (see EA). Thus, the full range within this category is \$35 to \$139 million cost savings per year.

Cost savings for in-place capping are greater than cost savings for subtitle D landfilling because the average cost per ton of capping soil (\$18) is less than the average cost per ton of placing soil in a subtitle D landfill (\$72).

## EXHIBIT 4.—CONTINGENT MANAGEMENT APPROACH PROCESS WASTE AND CONTAMINATED MEDIA

	Affected volumes		
	<HBN*10	>HBN*10- HBN*100	>HBN*100
Million tons/year			
Wastes eligible before treatment and residuals from other wastes	9 to 24	58 to 59	All other remain in subtitle C.
Contaminated media	0.4 to 2	<0.1 to 0.2	Remaining media.
Totals	9 to 26	58 to 60	Remaining.
Cost saving			
	<HBN*10	>HBN*10- HBN*100	>HBN*100
Total			
Million dollars/year			
Wastes eligible before Treatment and residuals from other wastes	67 to 132	228 to 233	0
Contaminated media	358 to 1,314	35 to 139	0
Totals	425 to 1,446	263 to 372	0
			295 to 365 393 to 1,453 688 to 1,818

## 5. Comparison of the Options

Four different regulatory options were considered in this analysis; the health-based approach, the characteristic management approach, the technology approach, and the contingent management approach. Quantification of potential cost savings associated with these options was developed to coincide with the primary options presented in the proposed rule. Results presented in this analysis will provide the reader with a useful overview of the potential range of impacts associated with each primary option in the proposed rule. Alternative sub-options discussed in the proposed rule are not quantified in this analysis. The Agency intends to fully quantify all aspects of each option and sub-option as presented in the final rule.

Total potential cost savings across all four options, for both process waste and contaminated media, range from about \$60 to \$1,870 million per year. The characteristic and contingent management approach appear to provide the highest general cost savings to industry, ranging from nearly \$700 to \$1,870 million per year. The technology based approach provides the least cost savings to industry, at \$200 to \$280 million per year.

Overall, it appears that those options that may be the most difficult to implement, enforce, and maintain, may provide the most cost savings. However, potentially significant implementation cost factors associated with the two high savings options have not been quantified in this analysis. Furthermore, potential costs associated with health-based assurances needed to implement the contingent and characteristic options may further reduce potential savings.

## D. Potential Health and Environmental Impacts

It is the Agency's intent that the criteria for exempting hazardous wastes and contaminated media from subtitle C regulation be set at levels that have been determined to be protective of human health and the environment. Hazardous wastes exempted from subtitle C regulation would remain subject to solid waste management regulations, which would provide an adequately protective level of management tailored to the low risks presented by the wastes.

A more comprehensive discussion of health and environmental impacts potentially associated with this proposed rule is available elsewhere in the preamble.

## E. Economic Impacts

Economic impact analysis is designed to determine the extent to which specific groups, such as industries, bear the costs or receive the benefits of environmental regulation. This information is important in evaluating the fairness of the distribution of benefits and costs, determining whether it is important to mitigate such effects, and assessing the social costs of regulation or, in the case of this proposal, the cost savings of deregulation. The two major types of economic impacts of the proposed rule are projected to be cost savings for hazardous waste generators whose wastes would be deregulated, and revenue losses for the waste management industry.

Based on the analysis of Generator Survey data, the major industrial sectors that generate the vast majority of listed hazardous wastes that could be affected

by this proposal are primary metals and fabricated metal products; chemicals, plastics, pharmaceutical, and allied products; and petroleum refining and asphalt and coatings production. These industries would be the main beneficiaries of cost savings from changes in hazardous waste management practices as a result of this proposed rule.

In addition to generators of hazardous wastes, this proposal would benefit those parties responsible for management of contaminated media. The affected parties are those who spend funds on site remediation activities, such as federal, state, and local governments that conduct, finance, or oversee remediation activities; potentially responsible parties (PRPs) under CERCLA and state laws who conduct or finance remediation activities; hazardous waste treatment, storage, and disposal facilities (TSDFs) that conduct corrective actions or close hazardous waste management units; and firms, such as hazardous waste generators, that must remediate existing contaminated soil or clean up future accidental spills.

Under this proposal, future revenues to the commercial hazardous waste management industry could be lower than in the absence of such a rule; less hazardous waste and contaminated media would be required to be treated and disposed in subtitle C facilities. Cost savings that accrue to generators as a result of shifts from hazardous to non-hazardous waste management may mean losses in revenues for the commercial hazardous waste management industry. The net economic impact on the industry is undetermined. However, the net impact on society is

likely to be positive as scarce economic resources are refocused on the more hazardous wastes.

Despite potentially large foregone revenues for the industry, this proposal is unlikely to significantly adversely affect a significant number of commercial hazardous waste management firms for several reasons. First, based on data for 1990, the industry is healthy and growing. Total revenues exceeded \$2.2 billion in 1990—more than a 50 percent increase over 1989 revenues.<sup>11</sup> Operating margins for the industry were 19 percent on average and rates of return on assets and equity were 8 percent and 13 percent respectively, representing a recovery from declines in 1989. Second, the industry still faces the prospect of continued growth in demand for commercial hazardous waste management as a result of other developments, such as increasing remediation activities (e.g., RCRA corrective actions) and the imposition of the land disposal restrictions. Third, many of the firms in the commercial hazardous waste management industry also operate subtitle D landfills. Thus, they would benefit from the increased demand for subtitle D management.

#### *F. Limitations of the Analysis*

The scope and accuracy of the methodology used to estimate the potential volumes of process wastes and contaminated media affected, and the associated cost savings are constrained in several ways. The major limitations include analytical and data constraints, non-quantified cost savings, non-quantified expenditures and unquantified effects on human health and the environment.

The Agency's analysis relies on data that have major limitations. For example, the analysis of process wastes is based on the Generator Survey, which reflects 1986 data. The generation and management of hazardous wastes have changed considerably since then. For example, at the time the survey was conducted, a virtually universal management proactive for wastewater involved storing large volumes in unlined pits, called surface impoundments, where the waters would be treated prior to reentering the larger NPDES system, or where wastewaters would be allowed to remain. In 1988, these impoundments had to comply with RCRA's minimum technology requirements, which meant for the

majority of them that they closed down. Wastewaters which had been handled in these impoundments were then handled largely in tanks. This change in practice put a premium on minimizing the amount of wastewater handled. It is thus possible that pre-1988 volumes of waters subject to subtitle C are overstated for that reason.

In addition, the data used in the analysis of contaminated media are highly variable from year to year which makes extrapolation from past records difficult. For example, the volumes and concentration levels of contaminated soils are highly site-specific and depend on the depth and location of the sampling.

The analysis assumes that all states will adopt this proposal. In fact, the Resource, Conservation and Recovery Act allows authorized states to set more stringent levels. Cost savings may be overestimated to the extent that states adopt more stringent levels than in the federal proposal. Cost savings, however, may be underestimated to the extent the proposal causes the deregulation of wastes that are hazardous under state, but not federal rules. Cost savings may be further underestimated if proposed levels make it cost-effective for generators to initiate waste minimization programs.

Furthermore, this analysis does not account for changes as a result of the TC rule. In addition any new or delisted constituents since 1986 are not included. Other economic impacts potentially associated with this proposed rule, but not addressed here, are numerous. These may include: corresponding management impacts associated with alternative waste generation and disposal practices, the potential for transferring waste from tanks to surface impoundments, alternative engineering standards and corresponding long-term capital savings. These are just a few of the secondary economic impacts potentially associated with this proposal. The Agency intends to address as many of these items as possible in the analysis to accompany the final rule.

#### *Non-Quantified Cost Saving*

This analysis does not attempt to estimate all types of cost savings and expenditures potentially associated with the proposed Rule. The focus of the analysis is one savings attributable to reduced treatment and disposal costs of process waste (and wastewaters) and contaminated media. Additional savings may arise which have not been estimated.

- Avoided treatment costs for contaminated ground water. While

contaminated media includes both soil and ground water, this analysis focuses exclusively on contaminated soil and therefore underestimates the cost savings. While the avoided costs are believed to be significantly smaller for ground water than soil, large quantities of ground water contaminated with listed hazardous wastes can be generated by remedial actions.

- Avoided storage costs, transportation costs, or other hazardous management costs arising prior to treatment.

#### *Non-Quantified Expenditures*

Potential changes in EPA and State administrative costs associated with this proposal are not estimated. While additional administrative costs will be involved in receiving, reviewing, and inspecting eligibility determinations, cost savings will arise because hazardous wastes, hazardous waste management units, and facilities will exit subtitle C. It is unclear whether the incremental costs would outweigh the incremental savings.

#### *G. Data Needs—Request For Comment*

Fundamental data limitations have been the primary difficulty in development of the preliminary economic assessment for this proposed rule. The Agency recognizes these data limitations and their impact on the analysis. One of the purposes of this proposal is to request data and comment related specifically to the current rule, as proposed. The Agency requests data and comments associated with three general areas of concern: industry; scientific/testing; and region, state and local issues.

Industry comments and data are requested under three broad categories:

##### *Waste/Media Generation:*

- Actual quantity of listed and/or characteristic hazardous waste generated on an average annual basis over the 1989 through 1992 period.
- Constituents and actual concentration levels of constituents linked to volumes identified above
- Constituent concentration estimates are needed at various points of generation and treatment:
- Out of the pipe
- After 1st treatment
- After 2nd treatment
- At point of disposal or discharge
- Actual quantity and extent of spills resulting in generation of contaminated media (soils, groundwater).

##### *Waste/Media Management:*

<sup>11</sup> "Commercial Hazardous Waste Management: Recent Financial Performance and Outlook for the Future." The Hazardous Waste Consultant, July/August 1991, pp. 4.1 to 4-20.

- Unit costs for treatment of waste and contaminated media to BDAT levels, under alternative methods and alternative quantity levels.
- Unit costs for management and storage of waste and/or media.
- Implications potentially associated with captive vs. offsite treatment (alternative cost estimates, management, etc.)
- Estimated pace of remedial activity for media.
- Potential impacts on costs associated with alternative engineering requirements for storage facilities.
- Comments on general facility costs and impacts/implications potentially associated with shifting from tanks to surface impoundments.
- Facility/Industry Implications:
  - Comments on closure implications potentially associated with this proposal.
  - Perceived implementation costs associated with this proposal.
  - Perceived liability, financial, and management implications potentially associated with this proposal.
  - Potential facility operational benefits as a result of this proposal, such as potential cost savings and alternative management practices that may result if wastewater could be "freed up" to use again in the plant as make up, cooling, and closed loop process water.

Scientific/testing data specifically requested in conjunction with development of the final Regulatory Impact Analysis (RIA) are those identifying actual test results for leachates.

Region, State and local comments requested in conjunction with the EA include comment on issues such as perceived rate and extent of adoption by states, and associated impacts on other Agency actions. Comment is also requested in the area of testing and enforcement, specifically the cost of mandatory quality assessment/control testing, the sampling and analysis plans, and the number of tests needed for a representative sample of specific waste streams. The current EA for the proposed rule has been developed under significant time and data limitations. The Agency is aware of these limitations and will work to address them in the RIA for the final rule. Part of the procedure for development of a final RIA includes revision of the current document based on changes for the final rule, data revisions, and response to comments. The Agency has identified specific areas of concern for receipt of data and comments in support of a final RIA. However, comments need not be

limited to the areas identified above. General and/or specific comments are welcome from all interested parties. The Agency has committed to the development of a full Regulatory Impact Analysis (RIA) in support of the April 1993 final rule.

#### XVII. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601–612, whenever an agency is required to publish a General Notice of Rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the impact of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). No regulatory flexibility analysis is required, however, if the head of the Agency certifies that the rule will not have a significant impact on a substantial number of small entities.

The Economic Assessment conducted in support of the proposed rule includes a section, "Impacts on Small Entities." The findings in this section are briefly summarized below.

Small quantity generators (SQGs) are usually defined as entities that generate between 100 and 1,000 kilograms per month of hazardous waste (1.3 to 13.23 U.S. tons per year). Conditionally exempt small quantity generators (CESQGs) are entities that generate less than 100 kilograms per month of hazardous waste. The Agency estimates there are about 65,000 to 70,000 SQGs generating about 250,000 to 300,000 metric tons of hazardous waste annually. Multiple industries are represented by SQGs.

Based on the maximum allowable volume for SQGs of 1,000 kilograms per month (13.23 U.S. tons/year), and estimated pre-demonstration cost savings of \$373/ton, the maximum tolerable demonstration costs are estimated at \$4,850 per year. Demonstration costs are fixed costs per waste stream, while cost savings depend upon the size of the waste stream and volume exempted. As a result, a minimum volume of waste must be generated in order for any of the Hazardous Waste Identification options to be profitable. The small entity analysis in the Economic Assessment found that, in general, facilities would need to generate a minimum of 200 tons of eligible hazardous waste per year in order to have a financial incentive to seek exemption.

Demonstration/implementation costs have not been fully quantified for SQGs but are expected to be generally the same as for larger facilities, except for an extended allowance for storage. This

factor alone is not expected to compensate for the several fold increase in volume needed to insure financial incentive for SQGs. As a result, the costs of gaining an exemption appear, in general, to significantly outweigh potential treatment and disposal savings for SQGs.

Demonstration costs under the enhanced characteristic option (ECHO) may be lower than other options because only one-time testing would be required. However, a multiplier of 100 under this option is expected to bring non-hazardous wastes into the subtitle C system. The Agency has not fully quantified demonstration costs under this option, or the additional waste volume that may be affected.

The CBEC option is expected to not significantly impact a substantial number of small entities because they generate waste volumes well below the point of financial incentive. Furthermore, exemption levels are considered deregulatory in nature and thus are expected to provide only beneficial opportunities for SQGs who may choose to pursue exemption under this proposal.

However, under the ECHO option it is possible that a significant number of small entities may be affected. Due to the short period of time available to the Agency to publish this proposal, the Agency has not had time to develop a regulatory flexibility analysis for the ECHO option in today's notice. For the final Regulatory Impact Analysis, the Agency intends to develop a comprehensive small entity analysis corresponding to this option. Pursuant to 5 U.S.C. 608(a) (allowing waiver or delay of initial regulatory flexibility analysis), I therefore find that publication of an initial regulatory flexibility analysis for this rule would be impracticable.

#### XVIII. Paperwork Reduction Act

The reporting, notification, or recordkeeping (information) provisions in this rule will be submitted for approval to the Office of Management and Budget (OMB) under section 3504(b) of the Paperwork Reduction Act of 1980, U.S.C. 3501 *et seq.* Any final rule will explain how its reporting, notification, or recordkeeping provisions respond to any OMB or public comments.

#### List of Subjects

##### 40 CFR Part 260

Administrative practice and procedure. Confidential business information. Hazardous waste.

**40 CFR Part 261**

Hazardous waste, Recycling, Reporting and Recordkeeping requirements.

**40 CFR Part 262**

Exports, Hazardous materials transportation, Hazardous waste, Imports, Labeling, Packaging and containers, Reporting and recordkeeping requirements.

**40 CFR Part 264**

Hazardous wastes, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds.

**40 CFR Part 268**

Hazardous waste, Reporting and recordkeeping requirements.

Dated: April 30, 1992.

William K. Reilly,  
Administrator.

**XIX. References**

- U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory: "Performance Testing of Method 1312—QA Support for RCRA Testing." EPA/600/489/022, June 1989.
- Research Triangle Institute: "Interlaboratory Comparison of Methods 1310, 1311, and 1312 for Lead in Soil". U.S. EPA Contract 68-01-7075, November 1988.
- U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response: OSWER Directive No. 9285.7: "Human Health Evaluation Manual, Part B: Development of Risk-based Preliminary Remediation Goals;" from Henry Longest II, Director, Office of Emergency and Remedial Response; and Bruce Diamond, Director, Office of Waste Programs Enforcement; to Regional Waste Management Division Directors: December 13, 1991.
- U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response: OSWER Directive No. 9850.4: "Interim Final Guidance for Soil Ingestion Rates;" from J. Winston Porter, OSWER Assistant Administrator; to Regional Administrators (I-X); January 27, 1989.
- U.S. Environmental Protection Agency, Office of Research and Development, Office of Health and Environmental Assessment: "Exposure Factors Handbook;" EPA/600/8-89/043, March 1990.

For the reasons set out in the preamble, it is proposed to amend title 40 of the Code of Federal Regulations as follows:

**[Option 1]****PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL**

1. The authority citation for part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921-6927, 6930, 6934, 6935, 6937, 6938, 6939, and 6974.

2. In 260.10, add the following definitions in alphabetical order:

**§ 260.10 Definitions.**

*Dilution* means the addition of materials, liquid or non-liquid, to increase the volume of a given waste or media to reduce constituent concentrations.

*Media* means any naturally-occurring soil or ground water.

*Soil* means unconsolidated earth material composing the superficial geologic strata (materials overlying bedrock), consisting of clay, silt, sand, or gravel size particles (sizes as classified by the U.S. Soil Conservation Service), or is a mixture of such materials with other liquids, sludges, or solids, and is inseparable by simple mechanical removal processes.

**PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE**

3. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6922.

4. In 261.3, paragraph (e) is removed.

5. In 261.4, paragraphs (a)(12) and (13)(b)(13) and (14) are added to read as follows:

**§ 261.4 Exclusions.**

(a) \* \* \*

(12) Environmental media (e.g., soils and ground water) contaminated or mixed with one or more wastes listed in subpart D or with residuals derived from the treatment, storage, or disposal of a waste listed in subpart D that meet the conditions of this paragraph and the applicable exemption levels specified in appendix XI to part 261 [for a generic exemption];

(i) Media with constituent concentrations meeting the exemption levels for [a generic exemption] in appendix XI will be considered non-hazardous so long as the following conditions are met:

(A) A sampling and analysis plan is prepared in accordance with the requirements specified in appendix XIII to part 261 prior to the waste being managed as non-hazardous;

(B) Representative samples of the contaminated media are analyzed in accordance with the requirements specified in appendices XI and XIII to

part 261 prior to the waste being managed as non-hazardous;

(C) Sampling and analysis of media is repeated annually for the first two years an exemption is claimed and every three years thereafter (for as long as remediation or generation continue) and when process or operating changes (including upsets) occur which could affect the medium's composition.

(D) Notification of the exemption claim is received by the Regional Administrator prior to any management of media qualifying for exemption under this paragraph as non-hazardous. Notification must be resubmitted annually for the first two years an exemption is claimed and every three years thereafter and when process or operating changes (including upsets) occur which could affect the medium's composition. The notification must include:

(1) The name, address, RCRA ID number of the person seeking the exclusion, and identification of the exemption being sought;

(2) EPA Hazardous Waste Number;

(3) Average and maximum monthly and annual amount of excluded media;

(4) Name and address of the disposal facility; and

(5) The following statement signed by the person seeking the exclusion or his authorized representative.

Under penalty of criminal and civil prosecution for making or submission of false statements, representations, or omissions, I certify that the requirements of 40 CFR 261.4(a)(12) have been met for all media contaminated with listed waste excluded from regulation according to the provisions of this part. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I have been authorized, in writing, to make such declarations by the person in charge of the generator's demonstration.

(ii) Notifications of the exemption must be submitted by certified mail to the Regional Administrator. Copies of notifications and all sampling and analysis records must be kept on-site for at least three years from the date of sampling. The three-year generator record retention period will be automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Regional Administrator. Owners and operators must retain these records until the facility is closed.

(iii) As a condition of exclusion and for purposes of enforcing the conditions

set out in this paragraph, any person qualifying for an exemption under this paragraph must, upon request of any duly designated representative of EPA, furnish information relating to media excluded under this paragraph and permit such representatives at all reasonable times to have access to, and to copy, all records relating to such media, to enter the facility at reasonable times, and to inspect and obtain samples of such media and samples of any containers or labeling for such media.

(iv) On, or within, 5 working days of submitting a first notification of exemption under this paragraph, the person claiming the exemption must submit a notice with the following information for publication in a major local newspaper of general circulation. The claimant must provide the Regional Administrator with certification of submitting the notice for publication. The claimant must also make the notification and all supporting data and documentation available for public review and copying, at a location at or near the facility, for sixty days following publication of the newspaper notice. The notice, which shall be entitled "Claim of Exemption from the Definition of Hazardous Waste under 40 CFR 261.4," must include:

(A) The name, address, RCRA ID number of the person seeking the exclusion, and identification of the exemption being sought;

(B) Description of the waste and EPA Hazardous Waste Number;

(C) Average and maximum monthly and annual amount of excluded media; and

(D) Name and address of the disposal facility;

(E) Name and address of the location where the notification provided to the Regional Administrator and all supporting data and documentation for the exemption can be viewed and copied by interested parties, and the length of time the information will remain available, and

(F) The name and address of the Regional Administrator where written comments on the exemption claim can be submitted.

(v) The exclusion under this provision does not apply to:

(A) Media that are contaminated with F020, F021, F023, F024, F027, F028, K001, K009, K010, K017, K023, K024, K026, K027, K036, K037, K038, K039, K040, K043, K044, K045, K047, K099, K119, and P110 and media that are contaminated with 40 CFR 261.33 wastes that are not listed in appendix XI;

(B) Contaminated media containing any constituent in appendix 1 that is quantifiable at a level that exceeds the

concentration-based exemption criteria level for that constituent;

(C) Contaminated media when the actual detection limit for a constituent (other than the 40 CFR part 261, appendix VII constituents for which the contaminating listed waste was listed) exceeds the concentration-based exemption criteria quantitation limit specified for that constituent in appendix 2 and the applicable concentration-based exemption criteria level is below that quantitation limit;

(D) Contaminated media that are diluted in ways not permitted under the land disposal restrictions in 40 CFR part 258 (rather than treated to reduce constituent loadings) to achieve the concentration-based exemption criteria levels;

(E) Contaminated media that change, or are changed, over time from the media characterized in the exemption determination due to reconstitution, process upsets or changes, or other factors affecting media composition or leaching; and

(F) Contaminated media that exhibit any of the characteristics of hazardous wastes listed in subpart C.

(13) Environmental media (e.g., soils and ground water) contaminated or mixed with one or more wastes listed in subpart D or with residuals derived from the treatment, storage, or disposal of a waste listed in subpart D that meet the conditions of this paragraph and the applicable exemption levels specified in appendix XI to part 261 [for a contingent management exemption];

(i) Before these hazardous wastes will be considered exempt from full regulation under this paragraph, the generator must comply with the following conditions:

(A) Sampling and analysis in accordance with the procedures and documentation requirements set forth in appendix XIII that demonstrates that the constituent concentrations in the media meet the applicable exemption levels in appendix XII. Sampling and analysis of media claiming an exemption under this paragraph must be repeated annually for the first two years the exemption claimed and every three years thereafter, and when changes to the production or treatment process (including upsets) occur that could affect waste composition;

(B) Notification of the Regional Administrator that an exemption is claimed for the media under this paragraph and certification that the constituent concentrations in the media meet the exemption levels set forth in appendix XI and that the media wastes will be disposed of in a unit meeting the criteria set forth in paragraph

(a)(13)(i)(C) of this section. Notifications of the exemption must be submitted by certified mail to the Regional Administrator and must be resubmitted annually for the first two years of the exemption and every three years thereafter, when changes to the production or treatment process (including upsets) occur that could affect media composition, and when there are changes in the identity of the designated disposal facility. The notification must include:

(1) The name, address, and RCRA ID number of the person seeking the exemption and identification of the type of exemption being claimed;

(2) Average and maximum monthly and annual amounts of excluded media;

(3) Name and address of the disposal facility; and

(4) The following statement signed by the person seeking the exemption or his authorized representative:

Under penalty of criminal and civil prosecution for making or submission of false statements, representations, or omissions, I certify that the listed hazardous waste for which I assert an exemption from regulation according to the provisions of this part meet the exemption levels set forth in appendix XI to 40 CFR part 261 and that the disposal facility identified in this notification contains units meeting the criteria of 40 CFR part 258, subpart D. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information upon which the claim of exemption is based is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

(C) Media meets the applicable LDR requirements of 40 CFR part 268 and is disposed of in a unit meeting the design criteria of 40 CFR part 258 subpart D.

(ii) Prior to satisfaction of all conditions for the exemption under this paragraph, including the condition that the media are managed in accordance with the applicable management standards, the wastes are hazardous wastes subject to full subtitle C regulation.

(iii) Notifications, and all sampling and testing plans and records upon which an exemption claim is based must be kept on-site for at least three years from the date of sampling. The three-year record generator retention period will be automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Regional Administrator. Owners and operators must retain these records until the facility is closed.



(iv) Any person qualifying for an exemption under this paragraph must, upon request of any duly designated representative of EPA, furnish information relating to media exempted under this paragraph and permit such representative at all reasonable times to have access to, and to copy, all records relating to such media, to enter the facility at reasonable times, and to inspect and obtain samples of such media and samples of any containers or labeling for such media.

(v) Respondents in actions to enforce this paragraph who raise a claim that a certain material is exempt from regulation under this section must demonstrate, through appropriate documentation, satisfaction of all conditions necessary for the exemption.

(vi) On or within 5 working days of submitting a first notification of exemption under this paragraph, the person claiming the exemption must submit a notice with the following information for publication in a major local newspaper of general circulation. The claimant must provide the Regional Administrator with certification of submitting the notice for publication. The claimant must also make the notification and all supporting data and documentation available for public review and copying, at a location at or near the facility, for sixty days following publication of the newspaper notice. The notice, which shall be entitled "Claim of Exemption from the Definition of Hazardous Waste under 40 CFR 261.4," must include:

(A) The name, address, RCRA ID number of the person seeking the exclusion, and identification of the exemption being sought;

(B) Description of the waste and EPA Hazardous Waste Number;

(C) Average and maximum monthly and annual amount of excluded media; and

(D) Name and address of the disposal facility;

(E) Name and address of the location where the notification provided to the Regional Administrator and all supporting data and documentation for the exemption can be viewed and copied by interested parties, and the length of time the information will remain available, and

(F) The name and address of the Regional Administrator where written comments on the exemption claim can be submitted.

(vii) The exclusion under this provision does not apply to:

(A) Media that are contaminated with F020, F021, F023, F024, F027, F028, K001, K009, K010, K017, K023, K024, K026, K027, K036, K037, K038, K039, K040,

K043, K044, K045, K047, K099, K119 and P110 and media that are contaminated with 40 CFR 261.33 wastes that are not listed in appendix XII;

(B) Contaminated media containing any constituent in appendix XII that is quantifiable at a level that exceeds the concentration-based exemption criteria level for that constituent;

(C) Contaminated media when the actual detection limit for a constituent (other than the 40 CFR part 261, appendix VII constituents for which the contaminating listed waste was listed) exceeds the concentration-based exemption criteria quantitation limit specified for that constituent in appendix XII and the applicable concentration-based exemption criteria level is below that quantitation limit;

(D) Contaminated media that are diluted in ways not permitted under the land disposal restrictions in 40 CFR part 258 (rather than treated to reduce constituent loadings) to achieve the concentration-based exemption criteria levels;

(E) Contaminated media that change or are changed over time from the media characterized in the exemption determination due to reconstitution, process upsets or changes, or other factors affecting media composition or leaching; and

(F) Contaminated media that exhibit any of the characteristics of hazardous wastes listed in subpart C.

(b) . . .

(13) Waste listed in subpart D; residuals from treatment, storage, and disposal of waste listed in subpart D; mixtures of solid wastes and wastes listed in subpart D; and materials that contain wastes listed in subpart D that meet the conditions of this paragraph and the applicable exemption levels specified in appendix XII to part 261:

(i) Wastes with constituent concentrations meeting the exemption levels for [a generic exemption] in appendix XI will be considered non-hazardous so long as the following conditions are met:

(A) A sampling and analysis plan is prepared in accordance with the requirements specified in appendix XIII to part 261 prior to the waste being managed as non-hazardous;

(B) Representative samples of the wastes are analyzed in accordance with the requirements specified in appendices XI and XIII to part 261 prior to the waste being managed as non-hazardous;

(C) Sampling and analysis of waste is repeated annually for the first two years an exemption is claimed and every three years thereafter (for as long as remediation or generation continue) and

when process or operating changes (including upsets) occur which could affect the medium's composition.

(D) Notification of the exemption claim and certification that all conditions of the exemption have been met is received by the Regional Administrator prior to any management of waste qualifying for exemption under this paragraph as non-hazardous. Notification must be resubmitted annually for the first two years an exemption is claimed and every three years thereafter and when process or operating changes (including upsets) occur which could affect the medium's composition. The notification must include:

(1) The name, address, and RCRA ID number of the person seeking the exclusion and identification of the type of exemption being claimed;

(2) EPA Hazardous Waste Number;

(3) Average and maximum monthly and annual amount of excluded media;

(4) Name and address of the disposal facility; and

(5) The following statement signed by the person seeking the exclusion or his authorized representative.

Under penalty of criminal and civil prosecution for making or submission of false statements, representations, or omissions, I certify that the requirements of 40 CFR 261.4(b)(13) have been met for all waste excluded from regulation according to the provisions of this part. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I have been authorized, in writing, to make such declarations by the person in charge of the generator's demonstration.

(ii) Notifications of the exemption must be submitted by certified mail to the Regional Administrator. Notifications and all sampling and analysis records must be kept on-site for at least three years from the date of sampling. The three-year generator record retention period will be automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Regional Administrator. Owners and operators must retain these records until the facility is closed.

(iii) As a condition of exclusion and for purposes of enforcing the conditions set out in this paragraph, any person qualifying for an exemption under this paragraph must, upon request of any duly designated representative of EPA, furnish information relating to waste

excluded under this paragraph and permit such representatives at all reasonable times to have access to, and to copy, all records relating to such waste, to enter the facility at reasonable times, and to inspect and obtain samples of such media and samples of any containers or labeling for such waste.

(iv) Respondents in actions to enforce this paragraph who raise a claim that a certain waste is exempt from regulation under this section must demonstrate, through appropriate documentation, satisfaction of all conditions necessary for the exemption.

(v) On or within 5 working days of submitting a first notification of exemption under this paragraph, the person claiming the exemption must submit a notice with the following information for publication in a major local newspaper of general circulation. The claimant must provide the Regional Administrator with certification of submitting the notice for publication. The claimant must also make the notification and all supporting data and documentation available for public review and copying, at a location at or near the facility, for sixty days following publication of the newspaper notice. The notice, which shall be entitled "Claim of Exemption from the Definition of Hazardous Waste under 40 CFR 261.4," must include:

(A) The name, address, RCRA ID number of the person seeking the exclusion, and identification of the exemption being sought;

(B) Description of the waste and EPA Hazardous Waste Number;

(C) Average and maximum monthly and annual amount of excluded media; and

(D) Name and address of the disposal facility;

(E) Name and address of the location where the notification provided to the Regional Administrator and all supporting data and documentation for the exemption can be viewed and copies by interested parties, and the length of time the information will remain available, and

(F) The name and address of the Regional Administrator where written comments on the exemption claim can be submitted.

(vi) The exclusion under this provision does not apply to:

(A) EPA Hazardous Waste Nos. F020, F021, F023, F024, F027, F028, K001, K009, K010, K017, K023, K024, K026, K027, K036, K037, K038, K039, K040, K043, K044, K045, K047, K099, K116 and P110 and 40 CFR 261.53 wastes that are not listed in appendix XI;

(B) Wastes containing any constituent in appendix XI that is quantifiable at a

level that exceeds the exemption level under this paragraph for that constituent;

(C) Wastes when the actual detection limit for a constituent (other than 40 CFR part 261, appendix VII constituents for which the waste was listed) exceeds the quantitation limit specified for that constituent in appendix XII the applicable exemption level set forth in appendix XII is below that quantitation limit;

(D) Wastes that are diluted (rather than treated to reduce constituent loadings) to achieve the exemption levels set forth in appendix XII;

(E) Wastes that change or are changed over time from the waste characterized in the exemption determination due to reconstitution, process upsets or changes, or other factors affecting waste composition or leaching;

(F) The unit in which the exempt waste was managed prior to exemption, unless excluded under the provisions of 40 CFR 260.20 and 260.22; and

(G) Wastes that exhibit any of the characteristics of hazardous wastes listed in subpart C.

(14) Residuals from treatment, storage, and disposal of waste listed in subpart D that meet the applicable treatment standards under 40 CFR part 268 and the conditions of this paragraph and the applicable exemption levels specified in appendix XII to part 261 for contingent management exemptions:

(i) Before these hazardous wastes will be considered exempt from full regulation under this paragraph, the generator must comply with the following conditions:

(A) Sampling and analysis in accordance with the procedures and documentation requirements set forth in appendix XII that demonstrates that the constituent concentrations in the waste meet the applicable exemption levels in appendix XII. Sampling and analysis of wastes claiming an exemption under this paragraph must be repeated annually for the first two years the exemption claimed and every three years thereafter, and when changes to the production or treatment process (including upsets) occur that could affect waste composition;

(B) Notification of the Regional Administrator that an exemption is claimed for these wastes under this paragraph and certification that the constituent concentrations in the waste meet the exemption levels set forth in appendix XII that the waste will be disposed of in a unit meeting the design criteria of 40 CFR part 258, subpart D. Notifications of the exemption must be submitted by certified mail to the Regional Administrator and must be

resubmitted annually for the first two years of the exemption and every three years thereafter, when changes to the production or treatment process (including upsets) occur that could affect waste composition, and when there are changes in the identity of the designated disposal facility. The notification must include:

(1) The name, address, and RCA ID number of the person seeking the exemption and identification of the type of exemption being claimed;

(2) EPA Hazardous Waste Number and description of the process generating the waste;

(3) Average and maximum monthly and annual amounts of excluded waste;

(4) Name and address of the disposal facility; and

(5) The following statement signed by the person seeking the exemption or his authorized representative:

Under penalty of criminal and civil prosecution for making or submission of false statements, representations, or omissions, I certify that the listed hazardous waste for which I assert an exemption from regulation according to the provisions of this part meet the exemption levels set forth in appendix XII to 40 CFR part 261 and that the disposal facility identified in this notification contains units meeting the design criteria of 40 CFR part 258, subpart D. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information upon which the claim of exemption is based is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

(C) The wastes meet the applicable LDR requirements of 40 CFR part 268 and are disposed of in a unit meeting the design criteria of 40 CFR part 258, subpart D.

(ii) Prior to satisfaction of all conditions for the exemption under this paragraph, including the condition that the wastes are managed in accordance with the applicable management standards, the wastes are hazardous wastes subject to full subtitle C regulation.

(iii) Notifications, and all sampling and testing plans and records upon which an exemption claim is based must be kept on-site for at least three years from the date of sampling. The three-year generator record retention period will be automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Regional Administrator. Owners and operators must retain these records until the facility is closed.

(iv) Any person qualifying for an exemption under this paragraph must, upon request of any duly designated representative of EPA, furnish information relating to wastes exempted under this paragraph and permit such representative at all reasonable times to have access to, and to copy, all records relating to such wastes, to enter the facility at reasonable times, and to inspect and obtain samples of such wastes and samples of any containers or labeling for such wastes.

(v) Respondents in actions to enforce this paragraph who raise a claim that a certain material is exempt from regulation under this section must demonstrate, through appropriate documentation, satisfaction of all conditions necessary for the exemption.

(vi) On or within 5 working days of submitting a first notification of exemption under this paragraph, the person claiming the exemption must submit a notice with the following information for publication in a major local newspaper of general circulation. The claimant must provide the Regional Administrator with certification of submitting the notice for publication. The claimant must also make the notification and all supporting data and documentation available for public review and copying, at a location at or near the facility, for sixty days following

publication of the newspaper notice. The notice, which shall be entitled "Claim of Exemption from the Definition of Hazardous Waste under 40 CFR 261.4," must include:

(A) The name, address, RCRA ID number of the person seeking the exclusion, and identification of the exemption being sought;

(B) Description of the waste and EPA Hazardous Waste Number;

(C) Average and maximum monthly and annual amount of excluded media; and

(D) Name and address of the disposal facility;

(E) Name and address of the location where the notification provided to the Regional Administrator and all supporting data and documentation for the exemption can be viewed and copied by interested parties, and the length of time the information will remain available, and

(F) The name and address of the Regional Administrator where written comments on the exemption claim can be submitted.

(vii) The exclusion under this paragraph does not apply to:

(A) EPA Hazardous Waste Nos. F020, F021, F023, F024, F027, F028, K001, K009, K010, K017, K023, K024, K026, K027, K036, K037, K038, K039, K040, K043, K044, K045, K047, K099, K119 and P110

and 40 CFR 261.33 wastes that are not listed in appendix XII;

(B) Wastes containing any constituent in appendix XII that is quantifiable at a level that exceeds the exemption level under this paragraph for that constituent;

(C) Wastes when the actual detection limit for a constituent (other than 40 CFR part 261, appendix VII constituents for which the waste was listed) exceeds the quantitation limit specified for that constituent in appendix XII and the applicable exemption level set forth in appendix XII is below that quantitation limit;

(D) Wastes that are diluted (rather than treated to reduce constituent loadings) to achieve the exemption levels set forth in appendix XII;

(E) Wastes that change or are changed over time from the waste characterized in the exemption determination due to reconstitution, process upsets or changes, or other factors affecting waste composition or leaching;

(F) The unit in which the exempt waste was managed prior to exemption, unless excluded under the provisions of 40 CFR 260.20 and 260.22; and

(G) Wastes that exhibit any of the characteristics of hazardous wastes listed in subpart C.

#### Appendix VIII—Amended

6. In appendix VIII of part 261, add the following hazardous constituents in alphabetical order:

#### Appendix VIII—Hazardous Constituents

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Acenaphthene.....	Acenaphthylene, 1,2-dihydro.....	83-32-9	.....
Acetaldehyde.....	.....	75-07-0	U001
Acetone.....	2-Propanone.....	67-64-1	U002
Acrylic acid.....	.....	79-10-7	U008
Benzo(k) fluoranthene.....	Same.....	201-08-9	.....
Benzyl alcohol.....	Benzenemethanol.....	100-51-8	.....
n-Butyl alcohol.....	.....	71-36-3	U031
Chlorodibromo-methane; Dibromo-chloromethane.....	Methane, dibromochloro-.....	124-48-1	.....
Cumene.....	.....	98-82-8	U055
Cyclohexanone.....	.....	108-94-1	U057
Di-n-butyl phthalate.....	1,2-Benzenedicarboxylic acid, dibutyl ester.....	84-74-2	U069
Dimethylamine.....	.....	124-40-3	U092
1,4-Dioxane.....	Same.....	123-91-1	U108
Ethyl acetate.....	.....	141-78-6	U112
Ethylbenzene.....	Benzene, ethyl-.....	100-41-4	.....
Ethyl ether.....	.....	60-29-7	U117
Furan.....	.....	110-00-9	U124

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Isophorone	2-Cyclohexen-1-one, 3,5,5-trimethyl	78-59-1	
Methanol		67-56-1	U154
Methyl isobutyl ketone		108-10-1	U161
Phenanthrene	Same	85-01-8	
Styrene	Benzene, ethenyl	100-42-5	
Vanadium	Same	Total	
Xylene	Benzene, dimethyl	1330-20-7	U239
Zinc	Same	Total	

7. At the end of part 261, appendices XI, XII and XIII are added to read as follows:

#### APPENDIX XI—CSEC FOR MEDIA

Common name <sup>1</sup>	Chemical abstract No. <sup>2</sup>	Tier 1						
		Exemption levels for soils <sup>3</sup> (mg/kg)	EQC for soils <sup>4</sup> (mg/kg)	Possible SW-846 method for soils <sup>5</sup>	Exemption levels for leachate <sup>6</sup> (mg/L)	EQC for leachate (mg/L)	Possible SW-846 method for leachate	Exemption levels for leachate <sup>7</sup> (mg/L)
Acenaphthene	83-32-9	1000	0.7	8270	20	0.01	8270	200
Acetone (2-propanone)	67-64-1	1000	.1	8240	40	.1	8240	400
Acetonitrile (methyl cyanide)	75-05-8	500	.1	8240	2	.1	12 8240	20
Acetophenone	98-86-2	1000	.7	8270	40	.01	8270	400
Acrolein	107-02-3	1000	.005	8240	7	.005	12 8240	70
Acrylamide	79-06-1	.2	.1	8260	8E-5	.1	8260	0.008
Acrylonitrile	107-13-1	.2	.005	8240	6E-4	.005	12 8240	.06
Aldrin	309-00-2	.07	.003	8080	2E-5	4E-5	8080	.002
Aniline (benzenamine)	62-53-3	200	.7	8270	0.06	.01	8270	6
Antimony (and compounds N.O.S.)	7440-36-0	30	20	6010	0.1	.03	7041	1
Aramid	140-57-8	40	1	8270	0.01	.02	8270	1
Arsenic (and compounds N.O.S.)	7440-38-2	20	.7	7080	0.5	.01	7060	5
Barium (and compounds N.O.S.)	7440-39-3	1000	1	6010	20	.02	6010	200
Benz(a)anthracene	6-55-3	.05	.009	8310	0.001	1E-4	8310	.01
Benzene	71-43-2	40	.005	8260	0.05	.005	8260	.5
Benzidine	92-87-5	.005	2	8270	2E-6	.03	8270	2E-4
Benzo(b)fluoranthene	205-99-2	.1	.01	8310	0.002	2E-4	8310	.02
Benzo(a)pyrene	50-32-8	.2	.02	8310	0.002	2E-4	8310	.02
Benzotrifluoride	98-07-7	.09	.004	8121	3E-5	6E-5	8121 / 8	.003
Benzyl alcohol	100-51-6	1000	1	8270	100	.02	8270	1000
Benzyl chloride	100-44-7	.7	.1	8121	0.002	.002	8121	.2
Beryllium (and compounds N.O.S.)	7440-41-7	0.3	.2	6010	0.01	.003	6010	.1
Bis(2-chloroethyl) ether	111-44-4	.1	.7	8270	3E-4	.003	8110	.03
Bis(2-chloroisopropyl) ether	39638-32-9	20	.7	8270	0.005	.01	8270	.5
Bis(2-ethylhexyl) phthalate	117-81-7	80	.7	8270	.04	.01	8270	.4
Bromodichloromethane	75-27-4	9	.005	8260	.003	.005	8260	.3
Bromomethane	74-83-9	100	.005	8260	.5	.005	8260	.5
Butanol	71-36-3	1000	.1	8240	40	.1	8240	400
Butyl benzyl phthalate	85-58-7	1000	.7	8270	1	.01	8270	10
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	68-85-7	80	.01	8150	.07	7D-5	8150	.7
Cadmium (and compounds N.O.S.)	7440-43-9	40	3	6010	.05	.001	7131	.5
Carbon disulfide	75-15-0	1000	.1	8240	40	.1	8240	400
Carbon tetrachloride	56-23-5	9	.005	8260	.05	.005	8260	.5
Chlordane	57-74-9	0.9	.009	8080	.02	1E-4	8080	.2
p-Chloroaniline	106-47-8	300	1	8270	1	.02	8270	10
Chlorobenzene	108-90-7	1000	.005	8260	1	.005	8260	10
Chlorobenzilate	510-15-6	1000	.7	8270	7	.01	8270	70
2-Chloro-1,3-butadiene (chloroprene)	126-99-8	1000	.005	8260	7	.005	8260	70
Chlorodibromomethane	124-48-1	10	.005	8260	.004	.005	8260	.4
Chloroform	67-66-3	200	.005	8260	.06	.005	8260	6
Chloromethane (Methyl Chloride)	74-87-3	90	.005	8260	.03	.005	8260	3
2-Chlorophenol	95-57-8	400	.7	8270	2	.01	8270	20
3-Chloropropene (allyl chloride)	107-05-1	50	.005	8240	.02	.005	8240	2
Chromium (and compounds N.O.S.)	7440-47-3	40	5	6010	1	.01	7191	10
Chrysene	218-01-9	10	.1	8310	.002	.002	8310	.02
Cresols	1319-77-3	1000	.7	8270	20	.01	8270	200
Cumene	98-82-8	1000	.005	8240	10	.005	8240	100

## APPENDIX XI—CBEC FOR MEDIA—Continued

Common name <sup>1</sup>	Chemical abstract No. <sup>2</sup>	Tier 1						
		Exemption levels for soils <sup>3</sup> (mg/kg)	EQC for soils <sup>4</sup> (mg/kg)	Possible SW-846 method for soils <sup>5</sup>	Exemption levels for leachate <sup>6</sup> (mg/L)	EQC for leachate (mg/L)	Possible SW-846 method for leachate	Exemption levels for leachate <sup>7</sup> (mg/L)
Cyanide (amenable).....	57-12-5	1000	.04	9010	2	.04	9010	20
2,4-Dichlorophenoxyacetic acid (2,4-D).....	94-75-7	800	1	8150	.7	.002	8150	7
DDD.....	72-54-8	5	.007	8080	.001	1E-4	8080	.1
DDE.....	72-55-9	3	.003	8080	.001	4E-5	8080	.1
DDT.....	50-29-3	3	.008	8080	.001	1E-4	8080	.1
Diallate.....	2303-16-4	20	.7	8270	.006	.01	8270	.6
Dibenz(a,h)anthracene.....	53-70-3	.02	.02	8310	.003	3E-4	8310	.03
1,2-Dibromo-3-chloropropane.....	96-12-8	.8	.005	8260	.002	3E-5	8011	.02
Dibromomethane (methylene bromide).....	74-95-3	800	.005	8260	4	.005	8260	40
1,2-Dichlorobenzene.....	95-50-1	1000	.01	8260	6	.01	8260	60
1,4-Dichlorobenzene.....	106-46-7	50	.005	8260	.75	.005	8260	7.5
3,3'-Dichlorobenzidine.....	91-94-1	2	1	8270	3E-4	.02	8270	.08
Dichlorodifluoromethane.....	75-71-8	1000	.005	8260	70	.005	8260	700
1,1-Dichloroethane.....	75-34-3	1000	7E-4	8021	40	7E-4	8021	400
1,2-Dichloroethane.....	107-06-2	10	.005	8260	.05	.005	8260	.5
1,1-Dichloroethylene.....	75-35-4	2	.005	8260	.07	.005	8260	.7
cis-1,2-Dichloroethylene.....	156-60-5	800	.005	8260	.7	.005	8260	7
trans-1,2-Dichloroethylene.....	156-60-5	1000	.005	8260	1	.005	8260	10
Dichloromethane (Methylene Chloride).....	75-09-2	100	.005	8240	.05	.005	8240	.5
2,4-Dichlorophenol.....	120-83-2	200	.7	8270	1	.01	8270	10
1,2-Dichloropropane.....	78-87-5	20	.005	8260	.05	.005	8260	.5
1,3-Dichloropropene.....	542-75-6	6	.005	8240	.002	.005	8240	.2
Dieldrin.....	60-57-1	.07	.001	8080	2E-5	2E-5	8080	.002
Diethyl phthalate.....	84-66-2	1000	.7	8270	300	.01	8270	3000
Diethylstilbestrol.....	56-53-1	2E-4	.3	8270	7E-8	.02	8270	7E-6
Dimethoate.....	60-51-5	20	.1	8141	.07	.003	8141	.7
3,3'-Dimethoxybenzidine.....	119-90-4	80	.7	8270	.03	.1	8270	.3
7,12-Dimethylbenz(a)anthracene.....	57-97-6	0.05	.7	8270	1E-5	.01	8270	.001
3,3'-Dimethylbenzidine.....	119-93-7	.1	.7	8270	4E-5	.01	8270	.004
2,4-Dimethylphenol.....	105-67-9	1000	.7	8270	7	.01	8270	70
Dimethyl phthalate.....	131-11-3	1000	.7	8270	400	.01	8270	4000
1,3-Dinitrobenzene.....	25154-54-5	8	.3	8330	.04	.004	8330	.4
2,4-Dinitrophenol.....	51-28-5	200	.3	8270	.7	.05	8270	7
2,4-Dinitrotoluene.....	121-14-2	2	.7	8270	5E-4	.01	8270	.05
2,6-Dinitrotoluene.....	606-20-2	.2	.7	8270	5E-4	.01	8270	.05
Di-n-butyl phthalate.....	84-74-2	1000	.7	8270	40	.01	8270	400
Di-n-octyl phthalate.....	117-84-0	1000	.7	8270	7	.01	8270	70
1,4-Dioxane.....	123-91-1	100	.1	8260	.03	.1	8260	.3
2378 TCDDioxins.....	1746-01-6	7E-6	1E-6	8290	5E-7	1E-8	8290	5E-6
2378 PeCDDioxins.....		1E-5	1E-6	8290	4E-9	1E-8	8290	4E-7
2378 HxCDDioxins.....		7E-5	2.5E-6	8290	2E-8	2.5E-8	8290	2E-6
2378 HpCDDioxins.....		7E-4	2.5E-6	8290	2E-7	2.5E-8	8290	2E-5
OCDD.....	3268-87-9	7E-3	5E-6	8290	2E-8	5E-8	8290	2E-4
Diphenylamine.....	122-39-4	1000	.7	8270	9	.01	8270	90
1,2-Diphenylhydrazine.....	122-66-7	1	.3	8270	4E-4	.01	8270	.04
Disulfoton.....	298-04-4	3	.04	8141	.01	7E-4	8141	.1
Endosulfan.....	115-29-7	4	.009	8080	.02	1E-4	8080	.2
Endrin.....	72-20-8	20	.004	8080	.02	6E-5	8080	.2
Epichlorohydrin.....	106-89-8	100	.1	8010	.04	.1	8010	.4
2-Ethoxyethanol.....	110-80-5	1000	1	8260	100	1	8260	1000
Ethyl acetate.....	141-78-6	100	.1	8240	300	.1	8240	3000
Ethylbenzene.....	100-41-4	1000	.005	8250	7	.005	8260	70
Ethyl ether.....	60-29-7	1000	.1	8240	70	.1	8240	700
Ethyl methacrylate.....	97-63-2	1000	.005	8240	30	.005	8240	300
Ethyl methanesulfonate.....	62-50-0	0.004	1	8270	1E-6	0.02	8270	1E-4
Ethylene dibromide.....	106-93-4	0.01	.005	8260	5E-4	3E-4	8011	.005
Famphur.....	52-85-7	3	1	8270	0.01	0.02	8270	.1
Fluoranthene.....	206-44-0	1000	.7	8270	10	0.01	8270	100
Fluorene.....	86-73-7	1000	.1	8310	10	0.002	8310	100
Formic acid.....	64-18-6	1000	.2	8015	70	0.2	8015	7000
Furan.....	110-00-9	80	.1	8240	0.4	0.1	8240	.4
2378 TCDFuran.....	51207-31-9	7E-5	1E-6	8290	2E-8	1E-8	8290	2E-6
12378 PeCDFuran.....		1E-4	1E-6	8290	4E-8	1E-8	8290	4E-6
23478 PeCDFuran.....	57117-31-4	1E-5	1E-6	8290	4E-9	1E-8	8290	4E-7
2378 HxCDFurans.....		7E-5	2.5E-6	8290	2E-8	2.5E-8	8290	2E-6
2378 HpCDFurans.....		7E-4	2.5E-6	8290	2E-7	2.5E-8	8290	2E-5
OCDF.....		7E-3	5E-6	8290	2E-6	5E-8	8290	2E-4
Heptachlor.....	76-44-8	0.2	.002	8080	0.004	3E-5	8080	.04
Heptachlor epoxide.....	1024-57-3	0.1	.06	8080	0.002	8E-4	8080	.02
Hexachlorobenzene.....	118-74-1	0.7	.004	8121	0.01	6E-5	8121	.1
Hexachloro-1,3-butadiene.....	87-68-3	10	.005	8260	0.004	0.005	8260	.4
alpha-HCH.....	319-84-6	0.2	.002	8080	6E-5	3E-5	8080	.006
beta-HCH.....	319-85-7	0.6	.004	8080	2E-4	6E-5	8080	.02
Hexachlorocyclopentadiene.....	77-47-4	600	.2	8121	0.5	0.002	8121	.5

## APPENDIX XI—CBEF FOR MEDIA—Continued

Common name <sup>1</sup>	Chemical abstract No. <sup>2</sup>	Tier 1						
		Exemption levels for soils <sup>3</sup> (mg/kg)	EQC for soils <sup>4</sup> (mg/kg)	Possible SW-846 method for soils <sup>5</sup>	Exemption levels for leachate <sup>6</sup> (mg/L)	Tier 2		
						EQC for leachate (mg/L)	Possible SW-846 method for leachate	Exemption levels for leachate <sup>7</sup> (mg/L)
Hexachloroethane	67-72-1	80	.001	8121	0.03	2E-5	8121	3
Hexachlorophene	70-30-4	20	.3	8270	0.1	0.05	8270	1
Indeno(1,2,3-cd)pyrene	193-39-5	10	.03	8310	0.004	4E-4	8310	.04
Isobutyl alcohol	78-83-1	1000	.1	8240	100	0.1	8240	1000
Isophorone	78-59-1	300	.7	8270	.09	.01	8270	9
Kepone	143-50-0	.02	1	8270	7E-6	.02	8270	7E-4
Lead (and compounds N.O.S.)	7439-92-1	500/9	.30	6010	.15	.01	7421	1.5
Lindane (gamma-HCH)	58-89-9	.9	.02	8121	.002	2E-4	8121	.02
Mercury (and compounds N.O.S.)	7439-97-6	20	.1	7470	.02	.002	7470	.2
Methacrylonitrile	126-98-7	8	.03	8240	.04	.03	8240	.4
Methanol	67-56-1	1000	.1	8240	200	.1	8240	2000
Methoxychlor	72-43-5	400	.1	8080	.4	.002	8080	.4
3-Methylcholanthrene	56-49-5	.04	.7	8270	1E-5	.01	8270	.001
Methyl ethyl ketone	78-93-3	1000	.1	8240	20	.1	8240	200
Methyl isobutyl ketone	108-10-1	1000	.1	8240	20	.1	8240	200
Methyl methacrylate	80-62-6	1000	.05	8240	30	.005	8240	300
Methyl parathion	298-00-0	20	.7	8270	.09	.01	8270	.9
Naphthalene	91-20-3	1000	.005	8260	10	.005	8260	100
2-Naphthylamine	91-59-8	1	.7	8270	4E-4	.01	8270	.04
Nickel (and compounds N.O.S.)	7440-02-0	1000	10	6010	1	.2	6010	10
Nitrobenzene	98-95-3	40	.7	8270	.2	.01	8270	2
2-Nitropropane	79-46-9	.1	.1	8260	4E-5	.1	8260	.004
N-Nitroso-di-n-butylamine	924-16-3	.2	.7	8270	6E-5	.01	8270	.006
N-Nitroso-diethylamine	55-18-5	.007	1	8270	2E-6	.02	8270	2E-4
N-Nitrosodimethylamine	62-75-9	.02	.7	8270	7E-6	.01	8270	7E-4
N-Nitrosodiphenylamine	86-30-6	200	.7	8270	.07	.01	8270	.7
N-Nitrosodi-n-propylamine	621-64-7	.2	.7	8270	5E-5	.01	8270	.005
N-Nitrosomethylethylamine	10595-95-6	.05	.7	8270	2E-5	.01	8270	.002
N-Nitrosopiperidine	100-75-4	.03	1	8270	9E-6	.02	8270	9E-4
N-Nitrosopyrrolidine	930-55-2	.5	3	8270	2E-4	.04	8270	2E-2
Octamethyl pyrophosphoramide	152-16-9	200	10	8270	.7	.2	8270	.7
Parathion	56-38-2	500	.7	8270	2	.01	8270	20
Pentachlorobenzene	608-93-5	60	.03	8121	.3	4E-4	8121	.3
Pentachloronitrobenzene (PCNB)	82-68-8	4	1	8270	.001	.02	8270	.1
Pentachlorophenol	87-86-5	9	3	8270	.01	.05	8270	.1
Phenol	108-95-2	1000	.7	8270	200	.01	8270	2000
Phenylenediamine /10		20	.7	8270	.007	.01	8270	.7
Phorate	298-02-2	20	.02	8141	.07	4E-4	8141	.7
Phthalic anhydride	85-44-9	1000	.7	8270	700	.1	8270/11	7000
Polychlorinated biphenyls	1336-36-3	10/9	.04	8080	.005	7E-4	8080	.05
Pronamide	23950-58-5	1000	.7	8270	30	.01	8270	300
Pyrene	129-00-0	1000	.7	8270	10	.01	8270	100
Pyridine	110-86-1	80	.005	8240	.4	.005	8240	.4
Safrole	94-59-7	6	.7	8270	.002	.01	8270	.2
Selenium (and compounds N.O.S.)	7782-49-2	400	50	6010	.5	.02	7740	5
Silver (and compounds N.O.S.)	7440-22-4	400	5	6010	2	.002	7761	20
Strychnine and salts	57-24-9	20	3	8270	.1	.04	8270	.1
Styrene	100-42-5	1000	1E-4	8021	1	1E-4	8021	10
1,2,4,5-Tetrachlorobenzene	95-94-3	20	.006	8121	.1	1E-4	8121	.1
1,1,1,2-Tetrachloroethane	630-20-6	40	.005	8260	.01	.005	8260	.1
1,1,2,2-Tetrachloroethane	79-34-5	8	5E-5	8021	.002	5E-5	8021	.2
Tetrachloroethylene	127-18-4	800	.005	8260	.05	.005	8260	.5
2,3,4,6-Tetrachlorophenol	935-95-5	1000	.7	8270	10	.01	8270	100
Tetraethyl dithiopyrophosphate	3689-24-5	40	.7	8270	.2	.01	8270	.2
Thallium (and compounds N.O.S.)	7440-28-0	6	30	6010	.02	.01	7841	.2
Toluene	108-88-3	1000	.005	8260	10	.005	8260	100
2,4-Toluenediamine	95-80-7	.4	1	8270	1E-4	.02	8270	.01
2,6-Toluenediamine	823-40-5	1000	.7	8270	70	.02	8270	700
o-Toluidine	95-53-4	5	.7	8270	.001	.01	8270	.1
p-Toluidine	106-49-0	6	.3	8270	.002	.01	8270	.2
Toxaphene	8001-35-2	1	.2	8080	.03	.002	8080	.3
Tribromomethane (Bromofom)	75-25-2	100	.005	8260	.04	.005	8260	.4
1,2,4-Trichlorobenzene	120-82-1	800	.7	8270	.09	.01	8260	.9
1,1,1-Trichloroethane	71-55-8	1000	.005	8260	.2	.005	8260	.20
1,1,2-Trichloroethane	79-00-5	20	.005	8260	.05	.005	8260	.5
Trichloroethylene	79-01-8	100	.005	8260	.05	.005	8260	.5
Trichlorofluoromethane	75-69-4	1000	.005	8260	100	.005	8260	1000
2,4,5-Trichlorophenol	95-95-4	1000	.7	8270	40	.01	8270	400
2,4,6-Trichlorophenol	88-06-2	100	.7	8270	.03	.01	8270	.3
2,4,5-Trichlorophenoxyacetic acid	93-76-5	800	.2	8150	.4	.002	8150	.40
2,4,5-TP (Silvex)	93-72-1	600	.2	8150	.5	.002	8150	.5
1,2,3-Trichloropropane	96-18-4	500	.005	8260	.2	.005	8260	.20
1,1,2-Trichloro-1,2,2-trifluoroethane	354-58-5	1000	.005	8260	1E-4	.005	8260	1E-5
s/m-Trinitrobenzene	99-35-4	4	.7	8270	.02	.01	8270	.2



## APPENDIX XI—CBEC FOR MEDIA—Continued

Common name <sup>1</sup>	Chemical abstract No. <sup>2</sup>	Tier 1						
		Exemption levels for soils <sup>3</sup> (mg/kg)	EQC for soils <sup>4</sup> (mg/kg)	Possible SW-846 method for soils <sup>5</sup>	Exemption levels for leachate <sup>6</sup> (mg/L)	EQC for leachate (mg/L)	Possible SW-846 method for leachate	Exemption levels for leachate <sup>7</sup> (mg/L)
Tris(2,3-dibromopropyl)phosphate .....	126-72-7	.1	10	8270	3E-5	.2	8270	.004
Vanadium .....	7440-62-2	600	5	6010	2	.08	6010	20
Vinyl chloride (Chloroethene) .....	75-01-4	.6	2E-4	8021	.02	2E-4	8021	.2
Xylenes .....	1330-20-7	1000	.005	8260	100	.005	8260	1000
Zinc (and compounds N.O.S.) .....	7440-66-6	1000	1	6010	70	.02	6010	700

<sup>1</sup> Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

<sup>2</sup> Chemical Abstracts Service registry number. Where "and compounds N.O.S." is entered, all species of the metal are included.

<sup>3</sup> Soils must be analyzed for all constituents on the CBEC list. If any of the constituent concentrations exceed the CBEC, the contaminated soil fails the Tier 1 CSEC demonstration. The exemption concentrations are based on health-based numbers.

<sup>4</sup> Exemption Quantitation Criteria (EQC). When a specified exemption level is below its specified EQC, the exemption demonstration must achieve an actual detection limit which is at least as low as the specified EQC. In these cases, if the demonstration shows that the constituent cannot be quantified above the CBEC, and the actual detection limit is equal to or below the EQC, the Agency will assume that the constituent is not present at levels of regulatory concern. If the actual detection limit exceeds the EQC for the specified constituent, the demonstration is considered invalid.

<sup>5</sup> Possible analytical methods refer to procedure numbers used in EPA Report SW-846 "Test Methods for Evaluating Solid Waste", Third Edition, November 1986, as revised, December 1987, for the methods used. Methods listed are believed to be capable of routinely determining concentrations of the respective analytes at the EQC or below. Other methods are permissible if a laboratory can demonstrate it is capable of achieving the EQCs for given analytes, while still adhering to the quality control guidance given in Chapter One of SW-846. Operators must report the concentrations actually determined by the method chosen, even if they are below the EQC.

<sup>6</sup> Groundwater and SW-846 Method 1311 leachate must be analyzed for all constituents on the exemption list. If any of the constituent concentrations exceed the CBEC concentrations, the waste fails the Tier 1 CBEC demonstration. The exemption concentrations are based on health-based numbers, a risk level of 10<sup>-6</sup>, and Maximum Contaminant Levels and include a dilution attenuation factor (DAF) of 10.

<sup>7</sup> Groundwater and SW-846 Method 1311 leachate must be analyzed for all constituents on the exemption list. If any of the constituent concentrations exceed the CBEC concentrations, the waste fails the Tier 2 CBEC demonstration. The exemption concentrations are based on health-based numbers, a risk level of 10<sup>-3</sup>, and Maximum Contaminant Levels and include a dilution attenuation factor (DAF) of 100.

<sup>8</sup> Benzotrichloride is hydrolytically unstable. Analyze for benzoic acid.

<sup>9</sup> CBEC for soil is based on EPA policy decision.

<sup>10</sup> CBEC concentrations are based on toxicity data for o-phenylenediamine. Method 8270 does not specify retention times for the three isomers, thus the lowest available toxicity data for the isomers is used as a worst-case scenario.

<sup>11</sup> Phthalic anhydride is hydrolytically unstable. Analyze for phthalic acid.

<sup>12</sup> Indicates constituent should be analyzed via direct injection.

## APPENDIX XII—CBEC FOR WASTE

Common name <sup>1</sup>	Chemical Abstract No. <sup>2</sup>	Tier 1			Tier 2
		Exemption levels for leachate <sup>3</sup> (mg/L)	EQC for leachate <sup>4</sup> (mg/L)	Possible SW-846 method for leachate <sup>5</sup>	Exemption levels for leachate <sup>6</sup> (mg/L)
Acenaphthene .....	83-32-9	20	0.01	8270	200
Acetone (2-propanone) .....	67-41-1	40	.1	8240	400
Acetonitrile (methyl cyanide) .....	75-05-8	2	.1	<sup>10</sup> 8240	20
Acetophenone .....	98-86-2	40	.01	8270	400
Acrolein .....	107-02-6	7	.005	<sup>10</sup> 8240	70
Acrylamide .....	79-06-1	8E-5	.1	<sup>10</sup> 8260	0.008
Acrylonitrile .....	107-13-1	6E-4	.005	<sup>10</sup> 8240	.06
Aldrin .....	309-002-2	2E-5	4E-5	8080	.002
Aniline (benzeneamine) .....	62-53-3	0.06	.01	8270	5
Antimony (and compounds N.O.S.) .....	7440-36-0	.1	.03	7041	1
Aramite .....	140-57-8	.01	.02	8270	1
Arsenic (and compound N.O.S.) .....	7440-38-2	5	.01	7060	5
Barium (and compounds N.O.S.) .....	7440-39-3	20	.02	6010	200
Benz[a]anthracene .....	6-55-3	.001	1E-4	8310	.01
Benzene .....	71-43-2	.05	.005	8260	.5
Benzidine .....	92-87-5	2E-6	.03	8270	2E-4
Benzo(b)fluoranthene .....	205-99-2	.002	2E-4	8310	.02
Benzo(a)pyrene .....	50-32-8	.002	2E-4	8310	.02
Benzotrichloride .....	98-07-7	3E-5	6E-5	8121/7	.003
Benzyl alcohol .....	100-51-6	100	.02	8270	1000
Benzyl chloride .....	100-44-7	.002	.002	8121	.2
Beryllium (and compounds N.O.S.) .....	7440-41-7	.01	.003	6010	.1
Bis(2-chloroethyl) ether .....	111-44-4	3E-4	.003	8110	.03
Bis(2-chloroisopropyl) ether .....	39638-32-9	.005	.01	8270	5
Bis(2-ethylhexyl) phthalate .....	117-81-7	.04	.01	8270	4
Bromodichloromethane .....	75-27-4	.003	.005	8260	.3
Bromomethane .....	74-83-9	0.5	.005	8260	5
Butanol .....	71-36-3	40	.1	8240	400
Butyl benzyl phthalate .....	85-68-7	1	.01	8270	10
2-sec-Butyl 4, 6-dinitrophenol (Dinoseb) .....	88-85-7	.07	7E-5	8150	.7
Cadmium (and compounds N.O.S.) .....	7440-43-9	.05	.001	7131	.05
Carbon disulfide .....	75-15-0	40	.1	<sup>10</sup> 8240	400
Carbon tetrachloride .....	56-23-5	.05	.005	8260	.5
Chlordane .....	57-74-9	.02	1E-4	8080	.2
p-Chloroaniline .....	106-47-8	1	.02	8270	10

## APPENDIX XII—CBEC FOR WASTE—Continued

Common name <sup>1</sup>	Chemical Abstract No. <sup>2</sup>	Tier 1			Tier 2
		Exemption levels for leachate <sup>3</sup> (mg/L)	EQC for leachate <sup>4</sup> (mg/L)	Possible SW-846 method for leachate <sup>5</sup>	Exemption levels for leachate <sup>6</sup> (mg/L)
Chlorobenzene	108-90-7	1	.005	8260	10
Chlorobenzilate	510-15-8	7	.01	8270	70
2-Chloro-1,3-butadiene (chloroprene)	126-99-8	7	.005	8260	70
Chlorodibromomethane	124-48-1	.004	.005	8260	.4
Chloroform	67-66-3	.06	.005	8260	6
Chloromethane (Methyl Chloride)	74-87-3	.03	.005	8260	3
2-Chlorophenol	95-57-8	2	.01	8270	20
3-Chloropropene (allyl chloride)	107-05-1	.02	.005	8240	2
Chromium (and compounds N.O.S.)	7440-47-3	1	.01	7191	10
Chrysene	218-01-9	.002	.002	8310	.02
Cresols	1319-77-3	20	.01	8270	200
Cumene	98-82-8	10	.005	8240	100
Cyanide (amenable)	57-12-5	2	.04	9010	20
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	0.7	.002	8150	7
DDD	72-54-8	.001	1E-4	8080	.1
DDE	72-55-9	.001	4E-5	8080	.1
DDT	50-29-3	.001	1E-4	8080	.1
Dialkyls	2303-16-4	.006	.01	8270	6
Dibenz(a,h)anthracene	53-70-3	.003	3E-4	8310	.03
1,2-Dibromo-3-chloropropane	96-12-8	.002	3E-5	8011	.02
Dibromomethane (methylene bromide)	74-95-3	4	.005	8260	40
1,2-Dichlorobenzene	95-50-1	6	.01	8260	60
1,4-Dichlorobenzene	106-46-7	.75	.005	8260	7.5
3,3'-Dichlorobenzidine	91-94-1	8E-4	.02	8270	.08
Dichlorodifluoromethane	75-71-8	70	.005	8260	700
1,1-Dichloroethane	75-34-3	40	7E-4	8021	400
1,2-Dichloroethane	107-06-2	.05	.005	8260	.5
1,1-Dichloroethylene	75-35-4	.07	.005	8260	.7
cis-1,2-Dichloroethylene	156-60-5	.7	.005	8260	7
trans-1,2-Dichloroethylene	156-60-5	1	.005	8260	10
Dichloromethane (Methylene Chloride)	75-09-2	.05	.005	8240	.5
2,4-Dichlorophenol	120-83-2	1	.01	8270	10
1,2-Dichloropropane	78-87-5	.05	.005	8260	.5
1,3-Dichloropropane	542-75-6	.002	.005	8240	.2
Dieldrin	60-57-1	2E-5	2E-5	8080	.002
Diethyl phthalate	84-66-2	300	.01	8270	3000
Diethylstilbestrol	56-53-1	7E-8	.02	8270	7E-6
Dimethoate	60-51-5	.07	.003	8141	.7
3,3'-Dimethoxybenzidine	119-90-4	.03	.1	8270	3
7,12-Dimethylbenz(a)anthracene	57-97-6	1E-5	.01	8270	.001
3,3'-Dimethylbenzidine	119-937	4E-5	.01	8270	.004
2,4-Dimethylphenol	105-67-9	7	.01	8270	70
Dimethyl phthalate	131-11-3	400	.01	8270	4000
1,3-Dinitrobenzene	25154-54-5	.04	.004	8330	.4
2,4-Dinitrophenol	51-28-5	.7	.05	8270	7
2,4-Dinitrotoluene	121-14-2	5E-4	.01	8270	.05
2,6-Dinitrotoluene	606-20-2	5E-4	.01	8270	.05
Di-n-butyl phthalate	84-74-2	40	.01	8270	400
Di-n-octyl phthalate	117-84-0	7	.01	8270	70
1,4-Dioxane	123-91-1	.03	.1	10 8260	3
2378 TCDDioxin	1746-01-6	5E-7	1E-8	8290	5E-6
2378 PeCDDioxins		4E-9	1E-8	8290	4E-7
2378 HxCDDioxins		2E-8	2.5E-8	8290	2E-6
2378 HpCDDioxins		2E-7	2.5E-8	8290	2E-5
OCDD	3268-87-9	2E-6	5E-8	8290	2E-4
Diphenylamine	122-39-4	9	.01	8270	90
1,2-Diphenylhydrazine	122-66-7	4E-4	.01	8270	.04
Disulfoton	298-04-4	.01	7E-4	8141	.1
Endosulfan	115-29-7	.02	1E-4	8080	.2
Endrin	72-20-8	.02	6E-5	8080	.2
Epichlorohydrin	106-89-8	.04	.1	10 9010	.4
2-Ethoxyethanol	110-80-5	100	.1	10 8260	1000
Ethyl acetate	141-78-6	300	.1	8240	3000
Ethylbenzene	100-41-4	7	.005	8260	70
Ethyl ether	60-29-7	70	.1	8240	700
Ethyl methacrylate	97-63-2	30	.005	8240	300
Ethyl methanesulfonate	62-50-0	1E-6	.02	8270	1E-4
Ethylene dibromide	106-93-4	5E-4	3E-4	8011	.005
Famphur	52-85-7	.01	.02	8270	.1
Fluoranthene	206-44-0	10	.01	8270	100
Fluorene	86-73-7	10	.002	8310	100
Formic acid	64-18-6	70	.2	10 8015	7000
Furan	110-00-9	.4	.1	8240	.4
2378 TCDFuran	51207-31-9	2E-8	1E-8	8290	2E-6
12378 PeCDFuran		4E-8	1E-8	8290	4E-6

## APPENDIX XII—CBEC FOR WASTE—Continued

Common name <sup>1</sup>	Chemical Abstract No. <sup>2</sup>	Tier 1			Tier 2
		Exemption levels for leachate <sup>3</sup> (mg/L)	EQC for leachate <sup>4</sup> (mg/L)	Possible SW-846 method for leachate <sup>5</sup>	Exemption Levels for leachate <sup>6</sup> (mg/L)
23478 PeCDFuran	57117-31-4	4E-9	1E-8	8290	4E-7
2378 HxCDFurans		2E-8	2.5E-8	8290	2E-6
2378 HpCDFurans		2E-7	2.5E-8	8290	2E-5
OCDF		2E-6	5E-8	8290	2E-4
Heptachlor	76-44-8	.004	3E-5	8080	.04
Heptachlor epoxide	1024-57-3	.002	8E-4	8080	.02
Hexachlorobenzene	118-74-1	.01	6E-5	8121	.1
Hexachloro-1,3-butadiene	87-68-3	.004	.005	8260	.4
alpha-HCH	319-84-6	6E-5	3E-5	8080	.02
beta-HCH	319-85-7	2E-4	6E-5	8080	.02
Hexachlorocyclopentadiene	77-47-4	.5	.002	8121	.5
Hexachloroethane	67-72-1	.03	2E-5	8121	.3
Hexachlorophene	70-30-4	.1	.05	8270	.1
Indeno(1,2,3-cd)pyrene	193-39-5	.004	4E-4	8310	.04
Isobutyl alcohol	78-83-1	100	.1	10 8240	1000
Isophorone	78-59-1	.09	.01	8270	.9
Kepone	143-50-0	7E-6	.02	8270	7E-4
Lead (and compounds N.O.S.)	7439-92-1	.15	.01	7421	1.5
Lindane (gamma-HCH)	58-89-9	.002	2E-4	8121	.02
Mercury (and compounds N.O.S.)	7439-97-8	.02	.002	7470	.2
Methacrylonitrile	126-98-7	.04	.03	10 8240	.4
Methanol	67-56-1	200	.1	8240	2000
Methoxychlor	72-43-5	.4	.002	8080	.4
3-Methylcholanthrene	56-48-5	1E-5	.01	8270	.001
Methyl ethyl ketone	78-93-3	20	.1	10 8240	200
Methyl isobutyl ketone	108-10-1	20	.1	10 8240	200
Methyl methacrylate	80-62-6	30	.005	8240	300
Methyl parathion	298-00-0	.09	.01	8270	.9
Naphthalene	91-20-3	10	.005	8260	100
2-Naphthylamine	91-59-8	4E-4	.01	8270	0.04
Nickel (and compounds N.O.S.)	7440-02-0	1	.2	6010	10
Nitrobenzene	98-95-3	.2	.01	8270	.2
2-Nitropropane	79-46-9	4E-5	.1	8260	.004
N-Nitroso-di-n-butylamine	924-16-3	6E-5	.01	8270	.006
N-Nitroso-diethylamine	55-18-5	2E-6	.02	8270	2E-4
N-Nitrosodimethylamine	62-75-9	7E-6	.01	8270	7E-4
N-Nitrosodiphenylamine	86-30-6	.07	.01	8270	.7
N-Nitrosodi-n-propylamine	821-64-7	5E-5	.01	8270	.005
N-Nitrosomethylethylamine	10595-95-6	2E-5	.01	8270	.002
N-Nitrosopiperidine	100-75-4	9E-6	.02	8270	9E-4
N-Nitrosopyrrolidine	930-55-2	2E-4	.04	8270	2E-2
Octamethyl pyrophosphoramide	152-16-9	.7	.2	8270	.7
Parathion	56-38-2	.2	.01	8270	.20
Pentachlorobenzene	608-93-5	.3	4E-4	8121	.3
Pentachloronitrobenzene (PCNB)	82-68-8	.001	.02	8270	.1
Pentachlorophenol	87-86-5	.01	.05	8270	.1
Phenol	108-95-2	200	.01	8270	2000
Phenylenediamine /8		.007	.01	8270	.7
Phorate	298-02-2	.07	4E-4	8141	.7
Phthalic anhydride	85-44-9	700	.1	8270 /9	7000
Polychlorinated biphenyls	1336-36-3	.005	7E-4	8080	.05
Pronamide	23850-58-5	30	.01	8270	300
Pyrene	129-00-0	10	.01	8270	100
Pyridine	110-86-1	.4	.005	8240	.4
Safrole	94-59-7	.002	.01	8270	.2
Selenium (and compounds N.O.S.)	7782-49-2	.5	.02	7740	.5
Silver (and compounds N.O.S.)	7440-22-4	.2	.002	7781	.20
Strychnine and salts	57-24-9	.1	.04	8270	.1
Styrene	100-42-5	1	1E-4	8021	10
1,2,4,5-Tetrachlorobenzene	95-94-3	.1	1E-4	8121	.1
1,1,1,2-Tetrachloroethane	630-20-6	.01	.005	8260	.1
1,1,2,2-Tetrachloroethane	79-34-5	.002	5E-5	8021	.2
Tetrachloroethylene	127-18-4	.05	.005	8260	.5
2,3,4,6-Tetrachlorophenol	935-95-5	10	.01	8270	100
Tetraethyl dithiopyrophosphate	3689-24-5	.2	.01	8270	.2
Thallium (and compounds N.O.S.)	7440-28-0	.02	.01	7841	.2
Toluene	108-88-3	10	.005	8260	100
2,4-Toluenediamine	95-80-7	1E-4	.02	8270	.01
2,6-Toluenediamine	823-40-5	.70	.02	8270	700
o-Toluidine	95-53-4	.001	.01	8270	.1
p-Toluidine	106-49-0	.002	.01	8270	.2
Toxaphene	8001-35-2	.03	.002	8080	.3
Trihomomethane (Bromolorm)	75-25-2	.04	.005	8260	.4
1,2,4-Trichlorobenzene	120-82-1	.09	.01	8260	.9
1,1,1-Trichloroethane	71-55-6	.2	.005	8260	.20

2. In § 261.3, paragraph (e) is removed, and paragraphs (a)(2)(iv)(F) and (c)(2)(ii)(C) are added to read as follows:

§ 261.13 Definition of hazardous waste.

- (a) . . .  
(2) . . .  
(iv) . . .

(F) Waste that contains hazardous constituents all of which have regulatory levels established under table 1 of 40 CFR 261.24. Generators which have wastes regulated as listed hazardous wastes which may become designated as non-listed wastes pursuant to this subparagraph must test their wastes for

all constituents listed in table 261.24 and provide EPA with a one-time notification prior to handling the waste as nonhazardous. The waste remains hazardous waste unless and until completion of testing and notification.

- (c) . . .  
(2) . . .  
(ii) . . .

(C) Waste that contains hazardous constituents all of which have regulatory levels established under table 1 of 40 CFR 261.24. Generators which have wastes regulated as listed hazardous

wastes which may become designated as non-listed wastes pursuant to this subparagraph must test their wastes for all constituents listed in table 261.24 and provide EPA with a one-time notification prior to handling the waste as nonhazardous. The waste remains hazardous waste unless and until completion of testing and notification.

3. In § 261.24, table 1 is revised to read as follows:

§ 251.24 Toxicity characteristic.

TABLE 1.—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTICS

EPA HW No. <sup>1</sup>	Contaminant	Chemical abstract No. <sup>2</sup>	Regulatory levels (mg/L)
D044	Acenaphthene.....	83-32-9	200
D045	Acetone (2-propanone).....	67-64-1	400
D046	Acetonitrile (methyl cyanide).....	75-05-8	20
D047	Acetophenone.....	98-86-2	400
D048	Acrolein.....	107-02-8	70
D049	Acrylamide.....	79-06-1	10
D050	Acrylonitrile.....	107-13-1	.06
D051	Aldrin.....	309-00-2	.002
D052	Aniline (benzeneamine).....	62-53-3	6
D053	Antimony (and compounds N.O.S.).....	7440-36-0	1
D054	Aramite.....	140-57-8	1
D004	Arsenic (and compounds N.O.S.).....	7440-38-2	5
D005	Barium (and compounds N.O.S.).....	7440-39-3	200
D055	Benz[a]anthracene.....	6-55-3	.01
D018	Benzene.....	71-43-2	.5
D056	Benzidine.....	92-87-5	.03
D057	Benzo(b)fluoranthene.....	205-99-2	.02
D058	Benzo(a)pyrene.....	50-32-8	.02
D059	Benzotrithione <sup>3</sup> .....	98-07-7	.003
D060	Benzyl alcohol.....	100-51-6	1000
D061	Benzyl chloride.....	100-44-7	2
D062	Beryllium (and compounds N.O.S.).....	7440-41-7	.1
D063	Bis(2-chloroethyl)-ether.....	111-44-4	.03
D064	Bis(2-chloroisopropyl) ether.....	39638-32-9	.5
D065	Bis(2-ethylhexyl) phthalate.....	117-81-7	.4
D066	Bromodichloromethane.....	75-27-4	.3
D067	Bromomethane.....	74-83-9	5
D068	Butanol.....	71-36-3	400
D069	Butyl benzyl phthalate.....	85-68-7	10
D070	2-sec-Butyl-4,6-dinitrophenol (Dinoseb).....	88-85-7	.7
D006	Cadmium (and compounds N.O.S.).....	7440-43-9	.5
D071	Carbon disulfide.....	75-15-0	400
D019	Carbon tetrachloride.....	56-23-5	5
D020	Chlordane.....	57-74-9	.2
D072	p-Chloroaniline.....	106-47-8	10
D021	Chlorobenzene.....	108-90-7	10
D073	Chlorobenzilate.....	510-15-6	70
D074	2-Chloro-1,3-butadiene (chloroprene).....	126-99-8	70
D075	Chlorodibromomethane.....	124-48-1	.4
D022	Chloroform.....	67-66-3	6
D076	Chloromethane (Methyl Chloride).....	74-87-3	3
D077	2-Chlorophenol.....	95-57-8	20
D078	3-Chloropropene (allyl chloride).....	107-05-1	2
D007	Chromium (and compounds N.O.S.).....	7440-47-3	10
D079	Chrysene.....	218-01-9	.02
D025	Cresol.....	1319-77-3	* 200
D023	o-Cresol.....	95-48-7	* 200
D024	m-Cresol.....	108-39-4	* 200
D025	p-Cresol.....	106-44-5	* 200
D080	Cumene.....	98-82-8	100
D081	Cyanide (amenable).....	57-12-5	20
D016	2,4-Dichlorophenoxyacetic acid (2,4-D).....	94-75-7	7
D082	DDD.....	72-54-8	.1
D083	DDE.....	72-55-9	.1
D084	DDT.....	50-29-3	.1
D085	Diallate.....	2303-16-4	.6
D086	Dibenz(a,h)anthracene.....	53-70-3	.03
D087	1,2-Dibromo-3-chloropropane.....	96-12-8	.02

TABLE 1.—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTICS—Continued

EPA HW No. <sup>1</sup>	Contaminant	Chemical abstract No. <sup>2</sup>	Regulatory levels (mg/L)
D088	Dibromomethane (methylene bromide)	74-95-3	40
D089	1,2-Dichlorobenzene	95-50-1	60
D027	1,4-Dichlorobenzene	106-46-7	7.5
D090	3,3'-Dichlorobenzidine	91-94-1	.08
D091	Dichlorodifluoromethane	75-71-8	700
D092	1,1-Dichloroethane	75-34-3	400
D028	1,2-Dichloroethane	107-06-2	.5
C029	1,1-Dichloroethylene	75-35-4	.7
D093	cis-1,2-Dichloroethylene	156-60-5	7
D094	trans-1,2-Dichloroethylene	156-60-5	10
D095	Dichloromethane (Methylene Chloride)	75-09-2	5
D096	2,4-Dichlorophenol	120-83-2	10
D097	1,2-Dichloropropane	78-87-5	.5
D098	1,3-Dichloropropene	542-75-6	.2
D099	Dieldrin	60-57-1	.002
D100	Diethyl phthalate	84-66-2	3000
D101	Diethylstilbestrol	56-53-1	1.02
D102	Dimethoate	60-51-5	.7
D103	3,3'-Dimethoxybenzidine	119-90-4	3
D104	7,12-Dimethylbenz(a)anthracene	57-97-6	1.01
D105	3,3'-Dimethylbenzidine	119-93-7	1.01
D106	2,4-Dimethylphenol	105-67-9	70
D107	Dimethyl phthalate	131-11-3	4000
D108	1,3-Dinitrobenzene	25154-54-5	.4
D109	2,4-Dinitrophenol	51-28-5	7
D030	2,4-Dinitrotoluene	121-14-2	.05
D110	2,6-Dinitrotoluene	606-20-2	.05
D111	Di-n-butyl phthalate	84-74-2	400
D112	Di-n-octyl phthalate	117-84-0	70
D113	1,4-Dioxane	123-91-1	3
D114	2378 TCDDioxin	1746-01-6	5E-6
D115	2378 PeCDDioxins		4E-7
D116	2378 HxCDDioxins		2E-6
D117	2378 HpCDDioxins		2E-5
D118	OCDD	3268-87-9	2E-4
D119	Diphenylamine	122-39-4	90
D120	1,2-Diphenylhydrazine	122-66-7	.04
D121	Disulfoton	298-04-4	.1
D122	Endosulfan	115-29-7	.2
D012	Endrin	72-20-8	.2
D123	Epichlorohydrin	106-89-8	4
D124	2-Ethoxyethanol	110-80-5	1000
D125	Ethyl acetate	141-78-6	3000
D126	Ethylbenzene	100-41-4	70
D127	Ethyl ether	60-29-7	700
D128	Ethyl methacrylate	97-63-2	300
D129	Ethyl methanesulfonate	62-50-0	1.02
D130	Ethylene dibromide	106-93-4	.005
D131	Famphur	52-85-7	.1
D132	Fluoranthene	206-44-0	100
D133	Fluorene	86-73-7	100
D134	Formic acid	64-18-6	7000
D135	Furan	110-00-9	4
D136	2378 TCDFuran	51207-31-9	2E-6
D137	12378 PeCDFuran		4E-6
D138	23478 PeCDFurans	57117-31-4	4E-7
D139	2378 HxCDFurans		2E-6
D140	2378 HpCDFurans		2E-5
D141	OCDF		2E-4
D031	Heptachlor	76-44-8	0.04
D142	Heptachlor epoxide	1024-57-3	.02
C032	Hexachlorobenzene	118-74-1	.1
C033	Hexachloro-1,3-butadiene	87-68-3	.4
D143	alpha-HCH	319-84-6	.006
D144	beta-HCH	319-85-7	.02
D145	Hexachlorocyclopentadiene	77-47-4	5
D034	Hexachloroethane	67-72-1	3
C146	Hexachlorophene	70-30-4	1
D147	Indeno(1,2,3-cd)pyrene	193-39-5	.04
D148	Isobutyl alcohol	78-83-1	1000
D149	Isophorone	78-59-1	9
D150	Kepone	143-50-0	1.02
D008	Lead (and compounds N.O.S.)	7439-82-1	1.5
D013	Lindane (gamma-HCH)	58-89-9	.02
D009	Mercury (and compounds N.O.S.)	7439-97-6	.2
D151	Methacrylonitrile	126-98-7	.4
D152	Methanol	67-56-1	2000
D014	Methoxychlor	72-43-5	.4
D153	3-Methylcholanthrene	58-49-5	1.01

TABLE 1.—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTICS—Continued

EPA HW No. <sup>1</sup>	Contaminant	Chemical abstract No. <sup>2</sup>	Regulatory levels (mg/L)
D035	Methyl ethyl ketone.....	79-93-3	200
D154	Methyl isobutyl ketone.....	108-10-1	200
D155	Methyl methacrylate.....	80-62-6	300
D156	Methyl parathion.....	298-00-0	.9
D157	Naphthalene.....	91-20-3	100
D158	2-Naphthylamine.....	91-59-8	.04
D159	Nickel (and compounds N.O.S.).....	7440-02-0	10
D036	Nitrobenzene.....	98-95-3	2
D160	2-Nitropropane.....	79-46-9	1.10
D161	N-Nitroso-di-n-butylamine.....	924-16-3	1.01
D162	N-Nitroso-diethylamine.....	55-18-5	1.02
D163	N-Nitrosodimethylamine.....	62-75-9	1.01
D164	N-Nitrosodiphenylamine.....	86-30-6	7
D165	N-Nitrosodi-n-propylamine.....	621-64-7	1.01
D166	N-Nitrosomethylethylamine.....	10595-95-6	1.01
D167	N-Nitrosopiperidine.....	100-75-4	1.02
D168	N-Nitrosopyrrolidine.....	930-55-2	1.04
D169	Octamethyl pyrophosphoramidate.....	152-16-9	7
D170	Parathion.....	56-38-2	20
D171	Pentachlorobenzene.....	608-93-5	3
D172	Pentachloronitrobenzene (PCNB).....	82-68-8	.1
D037	Pentachlorophenol.....	87-86-5	.1
D173	Phenol.....	108-95-2	2000
D174	Phenylenediamine <sup>3</sup> .....		.7
D175	Phorate.....	298-02-2	.7
D176	Phthalic anhydride <sup>4</sup> .....	85-44-9	1000
D177	Polychlorinated biphenyls.....	1336-36-3	.05
D178	Pronamide.....	23950-58-5	300
D179	Pyrene.....	129-00-0	100
D038	Pyridine.....	110-86-1	4
D180	Safrole.....	94-59-7	2
D010	Selenium (and compounds N.O.S.).....	7782-49-2	5
D011	Silver (and compounds N.O.S.).....	7440-22-4	20
D181	Strychnine and salts.....	57-24-9	1
D182	Styrene.....	100-42-5	10
D183	1,2,4,5-Tetrachlorobenzene.....	95-94-3	1
D184	1,1,1,2-Tetrachloroethane.....	630-20-6	1
D185	1,1,2,2-Tetrachloroethane.....	79-34-5	2
D039	Tetrachloroethylene.....	127-18-4	.5
D186	2,3,4,6-Tetrachlorophenol.....	935-95-5	100
D187	Tetraethyl dithiopyrophosphate.....	2689-24-5	2
D188	Thallium (and compounds N.O.S.).....	7440-28-0	.2
D189	Toluene.....	108-88-3	100
D190	2,4-Toluenediamine.....	95-80-7	1.02
D191	2,6-Toluenediamine.....	823-40-5	700
D192	o-Toluidine.....	95-53-4	.1
D193	p-Toluidine.....	106-49-0	2
D015	Toxaphene.....	8001-35-2	.3
D194	Tribromomethane (Bromoform).....	75-25-2	4
D195	1,2,4-Trichlorobenzene.....	120-82-1	.9
D196	1,1,1-Trichloroethane.....	71-55-8	20
D197	1,1,2-Trichloroethane.....	79-00-5	.5
D040	Trichloroethylene.....	79-01-6	5
D198	Trichlorofluoromethane.....	75-69-4	1000
D041	2,4,5-Trichlorophenol.....	95-95-4	400
D042	2,4,6-Trichlorophenol.....	88-06-2	3
D199	2,4,5-Trichlorophenoxyacetic acid.....	93-76-5	40
D017	2,4,5-TP (Silvex).....	93-72-1	5
D200	1,2,3-Trichloropropane.....	96-18-4	20
D201	1,1,2-Trichloro-1,2,2-trifluoroethane.....	354-58-5	1E 5
D202	sym-Trinitrobenzene.....	99-35-4	.2
D203	Tris(2,3-dibromopropyl)phosphate.....	126-72-7	1.20
D204	Vanadium.....	7440-62-2	20
D043	Vinyl chloride (Chloroethene).....	75-01-4	.2
D205	Xylenes.....	1330-20-7	1000
C206	Zinc (and compounds N.O.S.).....	7440-66-6	700

<sup>1</sup> Hazardous Waste Number<sup>2</sup> Chemical Abstracts Service registry number. Where "and compounds N.O.S." is entered, all species of the metal are included.<sup>3</sup> Benzotrichloride is hydrolytically unstable. Analyze for benzoic acid.<sup>4</sup> CSEC concentrations are based on toxicity data for o-phenylenediamine. Method 8270 does not specify retention times for the three isomers, thus the lowest available toxicity data for the isomers is used as a worst-case scenario.<sup>5</sup> Phthalic anhydride is hydrolytically unstable. Analyze for phthalic acid.<sup>6</sup> If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.<sup>7</sup> Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.**[Appendix VIII Amended]**

4.-6. In appendix VIII of part 261, add the following hazardous constituents in alphabetical order:



## APPENDIX VIII—HAZARDOUS CONSTITUENTS

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Acenaphthene	Acenaphthylene, 1,2-dihydro	83-32-9	
Acetaldehyde		75-07-0	U001
Acetone	2-Propanone	67-64-1	U002
Acrylic acid		79-10-7	U003
Benzo(k) fluoranthene	Same	201-08-9	
Benzyl alcohol	Benzenemethanol	100-51-6	
n-Butyl alcohol		71-36-3	U004
Chlorodibromo-methane; Dibromo-chloromethane	Methane, dibromochloro-	124-48-1	
Cumene		98-82-8	U055
Cyclohexanone		108-94-1	U057
Di-n-butyl phthalate	1,2-Benzenedicarboxylic acid, dibutyl ester	84-74-2	U069
Dimethylamine		124-40-3	U092
1,4-Dioxane	Same	123-91-1	U108
Ethyl acetate		141-78-6	U112
Ethylbenzene	Benzene, ethyl-	100-41-4	
Ethyl ether		60-29-7	U117
Furan		110-00-9	U124
Isophorone	2-Cyclohexen-1-one, 3,5,5-trimethyl	79-59-1	
Methanol		67-56-1	U154
Methyl isobutyl ketone		108-10-1	U161
Phenanthrene	Same	85-01-3	
Styrene	Benzene, ethenyl	100-42-5	
Vanadium	Same	Total	
Xylene	Benzene, dimethyl	1330-20-7	U239
Zinc	Same	Total	

7. At the end of part 261, appendix XI is added to read as follows:

#### Appendix XI—Sampling Requirements

##### 1. Environmental Media

(i) A sampling and analysis plan must be prepared that (1) describes the proposed exemption demonstration, (2) conforms to the description of such plans in Chapter One of SW-846, (3) describes how sample representativeness will be determined, and (4) describes the facility's quality assurance program.

(ii) Representative samples of the contaminated media must be analyzed according to the analytical methods specified in appendix XI to this part and the facility's sampling and analysis plan prior to management of the media as non-hazardous to determine whether the media meets the concentration-based exemption criteria levels specified in Appendix XI. Total constituent analyses of these samples must be conducted for each of the constituents in appendix XI. In

addition, for media containing greater than 0.5% solids as measured in step 7.1.1 (Preliminary determination of percent solids) of method 1312 (the Synthetic Precipitation Leaching Procedure), the samples must be extracted using method 1312, and the resultant extract analyzed for each of the constituents in appendix XI. The demonstration must include enough representative composite samples taken over a period of time and area sufficient to represent the temporal and spatial variability or uniformity of the media:

(A) Contaminated Soils/Sediments: Samples must be collected in such a manner as to define the boundaries of contamination. When the area of contamination is less than 40,000 square feet, divide the unit into at least four sections of equal area. Collect five random or fixed transect full-core subsamples from each section. Composite subsamples from each section. When the area of contamination is greater than 40,000 square feet, divide the unit into equal sections of not more than 10,000 square feet.

Collect five random or fixed transect full-core subsamples from each section. Composite subsamples from each section.

(B) Contaminated Ground Water From Pump and Treatment Operations: Collect a minimum of four time-composite samples (each composite should consist of four to five grab samples) collected over a period of at least one month.

(C) Contaminated In-Place Ground Water: Collect four rounds of samples from all ground water monitoring wells in an EPA- or state-approved ground water monitoring system that is designed to characterize the lateral and vertical extent and nature of the ground water contamination over a period of one year.

(D) Additional samples should be collected as needed to ensure that the sample set is representative of any temporal or spatial compositional variations, and to support required QA/QC analyses.

(iii) A sampling record must be maintained which includes:

(A) Name, address and RCRA ID number of facility;

(B) Names and qualifications of persons sampling the media;

(C) Date of sampling;

(D) Description of the unit or sampling area and an explanation of why the samples are representative of the temporal and spatial variability of the media;

(E) Description of sampling techniques, containerization and preservation of samples, and chain of custody; and

(F) Discussion of process and treatment operating parameters at the time of sampling.

(iv) A testing record must be maintained which includes:

(A) Name and address of laboratory analyzing the media;

(B) Names and qualifications of analysts;

(C) Date of analysis;

(D) Description of sample preparation techniques used for extraction of samples;

(E) Description of analytical methods and QA/QC procedures;

(F) Type and model number of instruments used in analytical procedures; and

(G) Analytical testing and QA/QC results.

(v) Sampling and analysis of media must be repeated annually for the first two years the exemption is claimed and every three years thereafter, and when process or operating changes (including upsets) occur which could affect the medium's composition.

## 2. Waste

(i) A sampling and analysis plan must be prepared that (1) describes the proposed exemption demonstration, (2) conforms to the description of such plans in chapter one of SW-846, (3) describes how sample representativeness will be determined, (4) discusses any modifications to the analytical protocols listed in appendix XI, and (5) describes the facility's quality assurance program.

(ii) Representative samples of the waste must be analyzed according to the analytical methods specified in appendix XII to this part and the facility's sampling and analysis plan prior to management of the waste as non-hazardous waste to determine whether the waste meets the concentration-based exemption criteria levels specified in appendix XII. The samples must be extracted using the Toxicity Characteristic Leaching Procedure, method 1311, and the resultant extract analyzed for each of the constituents in appendix XII. The demonstration must include enough representative composite samples taken over a period of time and area sufficient to represent the temporal and spatial variability or uniformity of the waste:

(A) Pipes and Other Process Discharges: Collect a minimum of four time-composite samples (each composite should consist of four to five grab samples) collected over a period of at least one month.

(B) Drums: Collect a minimum of four single-core samples from drums filled over at least a one-month period.

(C) Land Disposal Units (less than 40,000 square feet): Divide the unit into at least four sections of equal area. Collect five random or fixed transect full-core subsamples from each section. Composite subsamples from each section.

(D) Land Disposal Units (greater than 40,000 square feet): Divide the unit into equal sections of not more than 10,000 square feet. Collect five random or fixed transect full-core subsamples from each section. Composite subsamples from each section.

(E) Additional samples should be collected as needed to ensure that the sample set is representative of any temporal or spatial compositional variations, and to support required QA/QC analyses.

(F) Sampling and analysis of wastes must be reported annually for the first two years and every three years thereafter, and when process, operating or treatment changes (including upsets) occur which could affect the waste's composition.

(iii) A sampling record must be maintained which includes:

(A) Name, address, and RCRA ID number of facility;

(B) Names and qualifications of persons sampling the waste;

(C) Date of sampling;

(D) Description of the unit or sampling area and an explanation of why the samples are representative of the temporal and spatial variability of the waste;

(E) Description of sampling techniques, containerization and preservation of samples, and chain of custody; and

(F) Discussion of process and treatment operating parameters at the time of sampling.

(iv) A testing record must be maintained which includes:

(A) Name and address of laboratory analyzing the waste;

(B) Names and qualifications of analysts;

(C) Date of analysis;

(D) Description of sample preparation techniques used for extraction of samples;

(E) Description of analytical methods and QA/QC procedures;

(F) Type and model number of instruments used in analytical procedures; and

(G) Analytical testing and QA/QC results.

## PART 262—STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

8. The authority citation for part 262 continues to read as follows:

Authority: 42 U.S.C. 6906, 6912, 6922, 6923, 6924, 6925, and 6937.

9. In 262.20, paragraph (b) is revised to read as follows:

### § 262.20 General requirements.

(b) A generator must designate on the manifest one facility which is permitted to handle the waste described on the

manifest. In the case of wastes claiming an exemption under 40 CFR 261.4(b)(14) or media claiming an exemption under 40 CFR 261.4(a)(13), a generator must designate the facility identified in its exemption notification.

## PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

10. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924 and 6925.

11. Section 264.1 is amended by adding paragraph (g)(11) to read as follows:

### § 264.1 Purpose, scope and applicability.

(g) \* \* \*

(11) the owner or operator of a facility that accepts wastes claiming an exemption under § 261.4(b)(14), so long as:

(A) the owner or operator only accepts for disposal manifested wastes claiming an exemption under § 261.4(b)(14) exclusively or in addition to solid wastes;

(B) the owner or operator stores manifested waste claiming an exemption under § 261.4(b)(14) in accordance with the requirements of 40 CFR 262.34(a)(1) no longer than 10 days prior to disposal; and

(C) the owner or operator disposes of the waste claiming an exemption under § 261.4(b)(14) in a unit or units meeting the criteria of part 258, subpart D.

## PART 268—LAND DISPOSAL RESTRICTIONS

12. The authority citation for part 268 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6924.

13. Section 268.1 is amended by adding paragraph (c)(4) to read as follows:

### § 268.1 Purpose, scope and applicability.

\* \* \*

(c) \* \* \*

(4) Where the waste is exempted from subtitle C regulation under § 261.3(a)(2)(iv)(F) or § 261.3(c)(2)(ii)(C).

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